United States Court of Appeals

for the Second Circuit

APPELLEE'S SUPPLEMENTAL APPENDIX

74-1726

UNITED STATES COURT OF APPEALS
FOR THE SECOND CIRCUIT

- -x

MEREDITH CORPORATION,
an Iowa corporation,

Plaintiff-Appellant,

- against -

HARPER & ROW, PUBLISHERS, INC.; PAUL HENRY MUSSEN; JOHN JANEWAY CONGER; and JEROME KAGAN,

Defendants-Appellees,

BRIAN SUTTON-SMITH, an individual, and PRENTICE-HALL, INC., a Delaware corporation,

Additional Defendants on Counterclaim-Appellants.

74 1726

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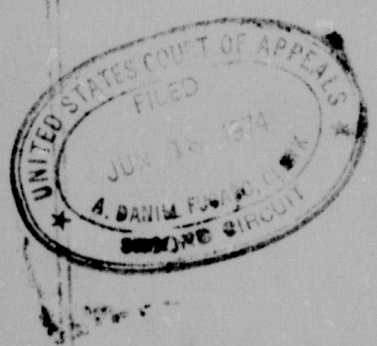
- -x

ON APPEAL FROM THE UNITED STATES DISTRICT COURT
FOR THE SOUTHERN DISTRICT OF NEW YORK

APPELLEES SUPPLEMENTAL
APPENDIX CONTAINING
DEFENDANTS' EXHIBITS 89 AND 90



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PAGINATION AS IN ORIGINAL COPY

Sutton-Smith

DEFENDANT'S EXHIBIT 89

which may be used

Item These may be

He has done very little of this really

centration - decentration

clumsy

own perspective

shift

notes

clumsy

This is the age, par excellence, of collections / stamps - which are first and foremost categorization exercises.

Another way of talking about the cognitive change of image level is in terms of

Piaget actually talks of cycles of egocentricism - each new cognitive function introduces a new form of egocentricism — the child is at first too rigid and centred in the application of his new concepts. In childhood, children take their own categories too concretely: In adolescence they treat their new ideas like realities, but of course each new age is increasingly free from the egocentrism of the prior age. Whether we use the term egocentrism (dominated by one's own viewpoint) or centred (not or centred, the connotation is the same.

WE HAD MUCH OF THIS IN 4-7 COGNITION
HOW MUCH REPETITION DO WE NEED!

egocentrism & decen-
thing are the same
Watch for this
confusion elsewhere

Piaget on Cognitive Development, Ages 7-11

We have noted above that the decline of egocentrism is one of the most important features of cognitive development in the age group we are now considering. ~~The decline of egocentrism (that is, the ability to see things from other than one's own narrow viewpoint) is, however, a particular instance of a more general process - namely, in Piaget's term, *decentering*.~~ The child who can decenter is able to detach his attention from one aspect of a situation and focus on several aspects of the situation simultaneously. One of Piaget's experiments with a nine-year-old child will serve to illustrate what decentering means.

its the same thing

The child was asked which would make a bigger bunch of flowers - all of the primulas or all of the yellow primulas. He answered all of the primulas adding that this bunch would include the yellow primulas. Asked which was bigger - all of the primulas or all of the flowers - he answered all of the flowers, again adding that the second bunch would include the primulas.

Had this in chapter 10 with a different flower!

This case shows that the 9-year-old child is able to focus simultaneously on the part and the whole. He separates the flowers physically into primula and non-primula, but he can reason about the part and the whole simultaneously. Thus, his thought has *decentered*. He is not concerned exclusively with part or whole, but with both at the same time. (We can see that this same principle is operative in the particular form of egocentrism. The child who is not exclusively egocentric is able to *decenter* his attention away from those aspects of a situation that relate solely to himself and is able to think "objectively" - that is, focus on several aspects of the situation at once. Socially, and morally, for example, he can consider another's feelings or point of view.)

Concrete Operations [illegible]

Piaget characterizes the stage of [illegible]

Check Ch 10. I think
focus there was
on the 4-7 year old's
inability to do this.
If ~~this~~ focus here is
sufficiently different that is,
or what 8-12 yr. old can do
just add a reference back to this
~~there~~ discussion in Ch 10, ~~not~~ so

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egocentrism & decentering are the same
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it's the same thing

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Had this in Chapter 10 with a different flower!

that continuity will be more apparent

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[illegible]

Piaget characterizes [illegible] of cognitive [illegible]

only one - length.

Another operation that enables the child to arrive at the correct answer is negation. He is aware that the action of compression the candles can be negated by its opposite - that is, spreading them out again so that they will be the same length as previously. He is able to perform this action because he can attend to transformations rather than merely perceiving states. In other words he sees that it took an actual physical operation to change the length of the row of candles, and this physical operation can be reversed. The pre-operational child, by contrast, is merely aware that the candy row was first one length and then another. He pays no attention to the transition between the two lengths.

Finally, the concrete operational child uses an identity operation. He sees that no candies have been added or taken away. Therefore, he reasons, their number must remain the same.

Kinds of Images According to Piaget, concrete operational and pre-operational children also differ in the way they form mental images. In order to understand his work in this area, we must first understand his distinction about types of images. He divides mental images into three major types - kinetic, involving an object's movement or change of position; transformational, involving an object's changing shape; and static, involving a collection of objects that remains the same.

Also chapter 10. Omit in Chapter 10 perhaps.

Piaget has found that preoperational children, in contrast to concrete operational children, cannot accurately reproduce transformations or changes of shape or form. For example, if a preoperational child is presented with a picture of one block exactly on top of the other, he can represent it even when it is not present. However, if the blocks are then moved so that the top block overlaps the bottom, the preoperational child cannot accurately draw the new position from memory. He can only do so while the image is present. He will show the blocks in

a different position from the initial one. However, it will not be the correct position. He has a vague global impression that the position of the blocks has changed, but he cannot really imagine the details.

A similar experiment has been conducted with transformational imagery (Piaget, 1956). Children are presented with semi-circular pieces of wire which are transformed in stages into straight lines. Here, it was found that pre-operational children had two kinds of difficulties. First, they represented the straight lines as being considerably shorter than were in fact. Second, they had trouble imagining the intermediate stages of transformation.

Piaget presents two reasons for these mistakes on the part of the preoperational child. First, unlike the concrete operational child, the younger child cannot conserve a quantity such as length of wire. (Conservation is an important component of many concrete operations.) A change in shape for the young child entails a change in length. Second, the young child focusses only on states and not the process of transformation. Not seeing the process of change as continuous, he finds it difficult to reconstruct the intermediate steps. He cannot imagine from states to transformations.

needs explication

Sequences of Development

In distinguishing the concrete operational from the preoperational child, we should point out that these two stages are idealized abstractions that admit of much individual and cultural variation. For example, it has been found that children generally master conservation of quantity by the age of 7, but do not comprehend conservation of weight until the age of nine. Conservation of volume (that is, perceiving that the same volume of a substance can fit in differently shaped containers) takes even longer, typically occurring around age eleven. This fact of lack of transfer of a given type of operation (e.g., conservation) to all kinds of situations shows the incompleteness of the concrete operational stage. The child is not yet capable of generalizing an operation but

rather, is limited by actual particular situations.

Finally, we should note that while the order of the stages has a great deal of cross-cultural generality, the timing of the stages (that is, the age at which they appear) varies depending on the types of experiences different cultures offer children (Goodnow & Bethon, 1966) (Lovell, 1961).

How The Stages Develop

Having considered how concrete operationalism differs from the preoperational stage, we must know inquire how the higher stage develops from the lower. According to Piaget, four factors are key ones in cognitive development. These are maturation, experience, social transmission of knowledge, and equilibration

? Do we have this in introduction or chapter 2

<u>Maturation</u> The human being is born with various physical structures that affect his intellectual develop and enable him to deal with his environment. Most of these structures and systems take time to develop to their highest level. The central nervous system, a key system, is a good example. At birth, the brain (part of the central nervous system) is smaller and lighter than the adolescent's brain. ~~Thus the~~ ? This probably sets neurological limits on the infant's capacity for thought ~~infant is not yet capable of abstract reasoning~~. Moreover, even if his brain could function at a high level, his muscular system would not be developed or coordinated enough to enable him to move around freely. ~~Thus~~, He could not gain many of the kinds of experience needed to facilitate abstract thought. ~~Thus~~, It is probable ~~clear~~ that the physical maturation of the various bodily systems is crucial for psychological development.

There is evidence that even at later stages of development, physical maturation may be a key factor. For example, according to Kagan and Kogan (1970), developmental scores on selected intellectual tests show a marked jump between the ages of 6 and 7 in [illegible] [illegible] the differences between the ages of 5 and 6. The [illegible] pattern seems to hold true for children of [illegible]

cultures and involves ... ill variety of tasks.

Moreover, it is also known that between the ages of 21/2 and 6 many of the symptoms of autistic children abate. Generally, it has been found that if a child develops useful language by the age of 5, there is a good chance that his autism will disappear. However, in some genetic brain disorders. It has been found that if a child is put on special diet until the age of six, he can be taken off this diet after he is 6 without serious retardation occurring. Finally, it has been found that children suffering from convulsive seizures are given medication until the age of 6, when the convulsions tend to disappear. All of these facts suggest that a major reorganization of brain chemistry may take place somewhere between the ages of 5 to 7.

If this is so, it would seem reasonable that such development would have an effect on cognitive powers. This conclusion receives support from a survey reported by Lagun and Dolan (1970). Two hundred children between the ages of 4 and 7 living in small villages in Guatemala were administered various cognitive tests. None of these children attended school. On the Embedded Figures Test, Matching Familiar Figures Test, Haptic Visual Matching Test, Memory for Digits Test, Memory for Sentnences Test, and Incidental Learning, there was a marked increase in performance between ages 4 and 5 and ages 6 and 7. However, between 5 and 6 there was relatively little increase. On another test, Vocabulary, development was linear and continuous as opposed to the sharp breaks in the first tests. The tests that showed patterns with breaks all involved sustained attention whereas vocabulary does not require this. Since it has been found that central nervous system damage can affect attention spans, the authors speculate that central nervous system development may be responsible for the increase in cognitive performance between the ages of 5 and 7.

However, as Piaget warns, we must be careful not to overemphasize the physical and maturational factors in cognitive development, at the expense of the cultural and environmental. For our knowledge of the central nervous system is, at present, limited, and thus we could hardly base our whole theory of cognitive development on maturation. Moreover, there is evidence to suggest that culture is an extremely strong factor. For example, children in the Caribbean island of Martinique reach the concrete operational stage about 4 years later than do Swiss children (Piaget, 1970). However, it would seem unlikely that physical differences in brain maturity could account for this fact. A cultural explanation is far more likely.

Experience The second factor in the evolution of cognitive stages is experience. Piaget divides experiences into two kinds - physical experience and logical-mathematical experience. Physical contact with objects enables the child to extract from his experience knowledge concerning the physical properties of objects. His own actions of manipulating and counting enable him to gain logical and mathematical knowledge of classes and relations. For example, if ten pebbles are arranged in a circle and then in a line, Piaget maintains that it is not physical experience or perception alone that enables the child to realize that both sets have the same number property - i.e., 10. Rather, it is the action of the child -counting, recounting, arranging, rearranging - that enables him to learn the properties of number.

Social Transmission Piaget's view of the key role of experience, especially the child's experience of his own activity, strongly affects his view of the nature and importance of social transmission of knowledge. While not denying the importance of teaching in cognitive development, Piaget stresses that the child must possess cognitive structures that can assimilate the information he receives. Moreover, Piaget also holds that logical thinking is best learned from action and not

via language, whether in the form of oral teaching by parents or teachers, learning from books, or the child's own silent "internal" speech. For Piaget, much of early learning and the acquisition of images and representations derives from imitating the actions of persons and things.

equilibration The notion of equilibration depends on the concept of equilibrium, a state of balance and harmony between the person and the environment. In order to achieve this harmony (an active system of exchanges with the world, rather than a passive state of rest), the child's cognitive system deals with external events (assimilates) and modifies itself in order to do so (accomodates).

Abil
Close to
Ginsberg
p 173

A given equilibrium has three major dimensions. First, there is the field of application, the objects the person acts on. In visual perception the field of equilibrium is the visual field, the things a person can apprehend at a glance. The greater the field the more powerful the equilibrium.

Second equilibria possess different degrees of mobility - that is, the amounts of spatial and temporal distance separating the person from the objects of that field. The greater the mobility, the more flexible and powerful the equilibrium. For example, unlike the field of visual perception, the field of classification may involve objects that are not immediately present (e.g., the class of kangaroos). Thus, the equilibrium involved in classifying is more mobile and can take in more possibilities than visual perception.

Finally, equilibria differ in their stability, that is, the person's ability to compensate mentally or by action for changes in the field of application, while yet maintaining the basic structure of the field. For example in visual perception, new elements may disturb the system. Parallel lines do not seem parallel when they are placed near curved lines. In classification, on the other hand, new elements may be incorporated without disturbing the system. Cards do not disturb the classes they are put with. They [illegible]

Disequilibration occurs when a given equilibrium is disturbed by a novel experience that the existing cognitive structure cannot deal with. For example, if a child is shown a quantity of liquid in a long narrow container which is then poured into a short wide container, the child will at first say there is less liquid in the second container because it is shorter. However, gradually the difference in width forces on the child and this, coupled with a lack of certainty about his first conclusion, may prompt him to say there is more liquid in the second container because it is wider. After a period of oscillating between height and width, the child comes to realize that one does not change without an inverse change in the other. Then, he sees that the liquid has remained the same. He decenters from height and width, coordinates both, and focuses on the transformations rather than merely the ... to achieve a new equilibrium.

Role-Taking and Egocentrism

One result of decreased egocentrism in cognitive development is an increased role-taking ability. By role-taking, we mean the ability to see things from another's perspective ("see" in the most general sense referring to pervasive things visually-spatially, linguistically, etc). Various researchers have investigated the development of role-taking in children at various levels of concrete operational functioning. Flavell, for example, (1968) has shown that young children could show awareness of another's perspective at one moment and fail to demonstrate this awareness in the next moment.

Flavell et al (1968) used communication skills to measure role-taking development. On the basis of this study, he divided role-taking into five components - antecedents, the awareness of other perspectives in general, knowing that confusing perspectives is difficult for particular situations; orientation, the ability to infer the intellectual attributes of another individual are relevant for the task at hand

(for example, in a task involving something that adults have to take into account another's height); maintenance, the ability to maintain these inferences over time in spite of competing egocentrics (which Piaget has investigated, too); and application, the ability to apply the awareness of role attributes to particular situations.

In one study, Cooper and Flavell (1972) found a certain degree of support for the thesis that the more general role-taking components develop first - that is, existence, need, and maintenance, since these apply to all tasks. Prediction and application are more specific and will depend on the nature of the cognitive task. For example, it was found that in a task involving description of a simple board game, both second graders and sixth graders showed correlations between specific role-taking abilities and general role-taking abilities. However, in another task, no correlation was obtained for eighth graders between the two types of role-taking skills. This result suggests that the more general abilities may develop earlier.

need more complete illustration

We should note here that role-taking (and its cognitive aspects) has a great deal of importance for a wide variety of behaviours - both social and moral. We will deal with some of these implications in later sections of this chapter.

Differentiation, Egocentrism, and Perception of Others

A theory of cognitive development that bears certain similarities to that of Piaget is Heinz Werner's (1937, 51). He maintains that with age the individual's thought becomes more differentiated, articulated, and hierarchically integrated. In other words, the individual is capable of making distinctions where at first his thought was narrow and global (i.e., he is capable of decentering from one limited aspect of a situation). Also, he becomes capable of increasingly general principles, of abstractions that subsume concrete instances (i.e.,

he achieves more stable equilibria).

Burnett, Press, & Crockett (1971) have applied Werner's concepts to the study of impressions that boys in grades 1, 3, and 5 formed of their peers. The boys were rated for the number of constructs they used to describe various peers, and for the degree of abstraction in the concepts they used. Their results confirmed both Werner's and Piaget's general notions. There was an increase with age in both the number of concepts used and in the number of abstract concepts. Also there was a shift from egocentric-concrete descriptions (e.g., "He lends me his pencil") to non-egocentric statements about the other's internal values and character (e.g., "He is generous").

It was also found that younger boys tended to describe girls very globally and superficially ("They're all silly" or "They're all alike"), while 5th graders, to whom girls were more relevant, did differentiate more in their descriptions. Also, it was found that the subjects described peers they liked in more detail than peers they disliked.

A
Following Piaget, ~~we~~ would speculate that the increased sophistication in interpersonal perception is a result of the equilibration process. As the child matures, he becomes more capable of conceptual organization of experience. Also, as his wants increase he feels the need to cooperate with others. Out of the new experiences, the clashes, and the unexpected behaviours of others, that arise from increased interaction and attempts at cooperation, disequilibria are created which are then resolved by more sophisticated conceptualizations of others' personalities. Clearly, this process plays a strong role in the nature and formation of friendships as will be seen in a later section.

Humor and Cognitive Development

One product of personality that shows a clear relation to cognitive development is the appreciation of humor. For example, very young children do not have the cognitive equipment to appreciate riddles.

Piaget has shown that it is around the age when riddles peak that children first manifest competence in the matter of verbal classification, reclassification, and multiple classification. In a 1971 study, Sutton-Smith analyzed riddles into various types consistent with the Piagetian framework. He found that many riddles popular in third grade circles (8 years) could be handled as types of classification problems. For example, the following riddle is an explicit reclassification:

> What has an ear but cannot hear?
> Corn.

whereas, the following is an implicit reclassification:

> Why did the dog go out into the sun?
> He wanted to be a hot dog.

Sutton-Smith distinguished a number of other types all of which involved Piagetian categories. He found that only 7% of all responses to riddles among children in grades 1 through 3 were pre-riddles, but 30% of the four year-olds responded with pre-riddle answers. Implicit reclassifications constituted the largest riddle group in grades 1 through 3 (50%). Thus, it would seem that at least one type of humor (the riddle) is very closely tied to cognitive development.

Because riddles are culturally based, quite arbitrary answers to questions, there being no systematic logical categorization or homogenic connection between the two.

Check & restate where too close. Add examples; change MCK examples where possible.

This is again too close to MCK for comfort.

15

Its "spot" by "spot" paraphrasing.

Cognitive Stages of Moral Development

Piaget's Theory

Piaget views morality as essentially developing out of peer relations. Unlike Freudian theory which sees morality primarily as a result of the parent-child relationship, Piaget's view stresses the acquisition of autonomy through social experience with peers growing out of the need to cooperate. According to Piaget, true morality can only be based on autonomy, not on the heteronomy (rule by others rather than oneself) which is at the heart of the relationship between the parent and the very young child. For this reason, then, Piaget holds that morality begins to develop in earnest from around the ages of 7 and 8, as the child's cognitive powers develop and his social interactions with peers increase.

Paraphrasing MCK p509

Piaget believes that from early childhood through middle childhood until about the age of 12, the child's concept of justice passes from a rigid sense of right and wrong based on pre-determined (usually literally interpreted parental) codes, to a more flexible notion based on equity and the specifics of a given moral situation. Thus, a 5-year-old will tend to see all lying as bad whereas an older child of 8 or 9 years is more likely to realize that there may be exceptions to this strict rule.

Piaget investigated his theories about moral development by asking children moral questions such as "Why shouldn't you cheat in a game?" or telling them stories that involved moral questions. He then carefully studied the response patterns of children of different age groups and developed categories that characterized the types of morality at different ages.

One type of story that Piaget used involved a conflict between [illegible] of justice and obedience to parents. [illegible] children [illegible] the obedience to parents [illegible]

we never say confirms

of [illegible]) while the older children chose challenged parents less frequently. This result supports the Piagetian view that early conscience tends to be based on prohibitions (usually parental) against specific behaviours. This is contrast to the morality that develops during the course of middle childhood which is based rather on internal sanctions and general principles.

Piaget has broken down moral judgements into several dimensions. One of these is a scale of relativism vs. absolutism. As indicated above with the example about lying, as the child grows older his judgements tend to become less absolute and authoritarian. Instead he begins to see that morality is based on need for harmony between persons rather than conformity to an iron law. He bases his morality more on the needs and desires of the group, as he begins to interact more in the social world. Relativism replaces realism. "For very young children, a rule is a sacred reality, because it is traditional; for the older ones it depends upon mutual agreement." (Piaget, 1932) It should be pointed out here that mutual agreement presupposes a certain decline of egocentrism, and the growth of the ability to imagine another's viewpoint. Thus, very basic cognitive developments underly the ~~Recent research has shown that moral attitude.~~ growth of moral relativism.

On the question of general principles versus specific prohibitions Piaget's investigations also produced significant results. He asked a group of children between the ages of 6 and 12 what things they thought were unfair. 64 % of children between 6 and 8 cited "behaviours forbidden by parents" while only 7% in the 9 to 12 year-old group did so. By contrast, 73% of the 9 to 12 year-olds mentioned inequality of treatment and punishment while only 27% of the 6 to 8 year-olds did so. This is in keeping with a view of morality that sees the child's conscience developing out of pre-moral hedonism (doing whatever one wants to do and can get away with), through a period of

Should mix in more
Ginsberg p 100-101.
Check McK. & follow suggestion it close.

this close to McK p509

reliance upon external rules and sanctions, to a stage of more reliance on internal moral principles.

Another dimension that Piaget studied was the focus upon intentions or consequences in judging the actions of others. He found that concern with intentions increased with age. Older children, themselves acting upon internal principles, will naturally be more concerned with the intentions of others. Again, we must note that the ability to consider others' motivations depends to a great degree on imagination, and the decline of egocentrism.

Another distinction that Piaget uses is the difference between restitutive and expiative justice. Restitutive justice is concerned more with the redress of injuries and in maintaining a balance between persons. Expiative justice focuses more on punishment and the relief of guilt. With restitutive justice one "pays" out of mutual agreement based on a social contract. With expiative justice one pays for one's misdeed on the basis of an inviolate and abstract rule. Again, older children, being more aware of the needs and desires of the group, will be inclined to employ notions of restitutive justice, since this is the more flexible utilitarian view designed to maintain the good of all members of the group. Younger children, less concerned with group living, and more responsive to the demands of parents, may tend to act more on the basis of guilt and will thus tend to use expiative justice. A crude example of the difference between the two types of justice might be as follows. If one child has destroyed another's toy, expiative justice might demand that his toy be destroyed or taken away. Restitutive justice, however, would require that the child who purposely destroyed the toy be obliged to furnish the injured party with another toy.

One other dimension of the growth of morality is the distinction between conformity to the expectations of those in authority and conformity to rules. Here, as usually the trend is not

greater reliance on peers for moral standards and judgments, the older the child becomes.

Piaget-Inspired Research on Moral Development

Many researchers have attempted to repeat some of Piaget's studies or to devise new studies to test his hypotheses concerning the stages of moral development. Durkin, for example, (1959) asked 101 boys and girls 6, 8, and 3 what was the correct thing to do if one child hit another. The older children tended to ask what the circumstances and motivation of the act were more often than did the younger children. Thus, Piaget's generalization about increased concern with intention received evidential support. Lerner (1937), in studies of both Swiss and American children, also confirmed Piaget's theses about changes in moral judgment. His findings held equally well for lower-class and middle-class children. He found a decline with age in suggestions for solving conflicts by acquiescence to adult demands or obedience to authority.

Harrower (1971) has tabulated some of the research that deals with Piaget's distinctions concerning moral attributes. He lists 21 studies by various investigators that were conducted in Western countries between the years 1937 and 1964 (including one study done in 1934 that, nevertheless, dealt with an area Piaget discusses, namely restitutive vs. expiative justice). These studies were concerned with relativism vs. absolutism, objective vs. subjective view of punishment vs. immanent justice, intentions vs. consequences, restitutive justice vs. expiative justice, and conformity to peer expectations vs. obedience to adult authority. In all studies but one, Gillmor (1950), Piaget's views were upheld. That is, relativism, objective views of punishment, concern with intentions in moral judgment, concern for restitutive justice, and conformation to peer expectations all increased with age.

Moreover, the samples of subjects used in these studies were drawn from a wide variety of populations differing in socioeconomic status, intelligence, and race. Thus, it would seem that Piaget's findings have considerable validity even across a wide variety of individual and social factors.

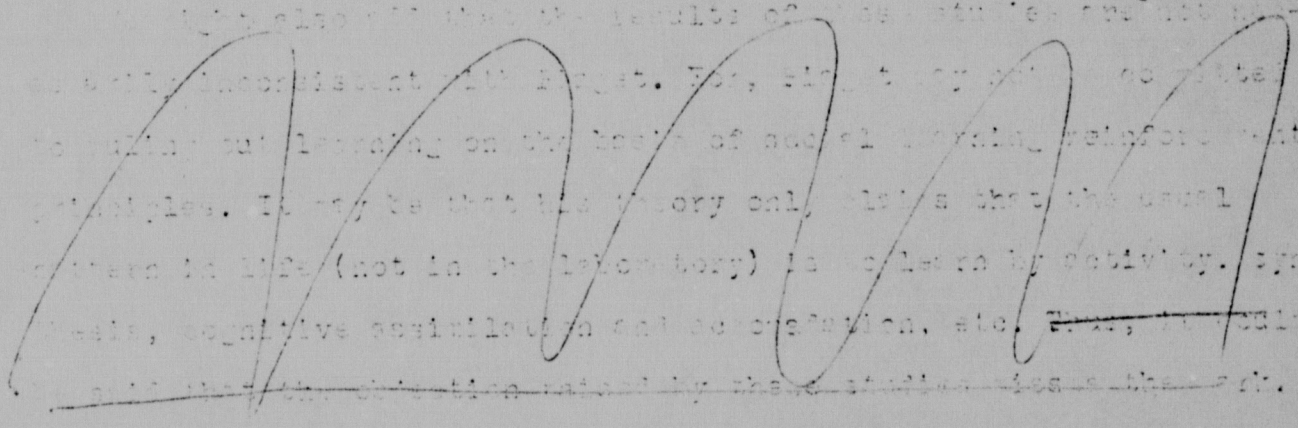
Problems with Piagetian Theory

Although Piaget's hypotheses about moral development have received a good deal of support, they have also been criticized on several grounds. One objection has been to Piaget's view that each stage of development involves a cognitive reorganization and therefore moral development should occur in sharp breaks rather than gradually. The evidence that exists from cross-sectional studies shows rather a gradual movement in age trends for moral judgement. ~~Thus, it would seem that Piaget's emphasis on the aspect of cognitive reorganization is unwarranted.~~ Too strong

However, Hoffman(1971) argues that cross-sectional studies have a built-in bias against revealing sharp breaks. He claims that sudden spurts in moral development occur at different times for different children and that averaging by age norms will tend to wash out these individual spurts. To adequately test the hypothesis of sudden moral growth, longitudinal studies of a number of individuals are needed.

Another line of objection to Piaget's theory has been that it is not clear that progression through the moral stages is invariant and irreversible. If this is the case, it would seem that morality is not as closely tied to cognitive level as Piaget has indicated.

A study by Bandura and McDonald (1963) of boys aged 5 to 11 years had some of the sample observe an adult model being reinforced for expressing moral judgements that were more advanced than their own. Children were found to shift their own judgements in the direction of the model. The same thing occurred when the model was reinforced for expressing judgements less advanced than their own.



A similar result was obtained by LeFurgy and Woloshin (1969) using adolescent models and subjects, and found the shift to last [illegible] three months. The moral dimension in the later study was the difference between viewing legal and social norms as inviolable as opposed to seeing them as violable under extenuating circumstances.

The fact that children's behaviour could so easily be manipulated seems to challenge the Piagetian assumption that the stages of moral growth are irreversible and invariant and that movement through a stage involves a process of successive cognitive synthesis. ~~Moreover, the~~ ~~Alternatively~~ Reversals are of course easier to explain than progression cause individuals do not necessarily forsake lower responses when acquiring higher ones. ~~fact that shifts in a forward direction could be obtained seems to indicate that social experience is not as necessary to the development of moral reasoning as Piaget has supposed.~~

However, there is also a problem with the design of these studies as Hoffman (1971) points out. ~~Th~~ In all of the studies of this sort the items used in both the test before exposure to the model and the test after exposure were very similar. Thus, all that the study may show is that surface responses can be modified. The actual underlying cognitive structure may be left unchanged. Rothman's study (INSERT

~~It is also said that the results of these studies are not necessarily inconsistent with Piaget. For, [illegible] to [illegible] learning on the basis of social learning reinforcement principles. It may be that his theory only claims that the usual pattern in life (not in the laboratory) is to learn by activity, synthesis, cognitive assimilation and accommodation, etc. Thus, it could be said that the objection raised by these studies misses the point.~~

Kohlberg's Theory of Moral Stages

Lawrence Kohlberg, while accepting the Piagetian cognitive approach to the study of moral development, has amplified and extended the system of moral stages. His account of moral development employs six stages which are grouped in three major levels (Kohlberg, 1958, 6[illegible], 6[illegible], 69).

Rothman's 1972 study provides a partial answer tosome of these dilemnas. She had

(1972)
Rothman in a parallel study in which children of varying levels of moral judgment watched models advocating various courses of action on moral ~~levels~~ stage higher or lower than their own and found were differentially influenced according to their own moral ~~level~~ stage. Those at more ~~elementary levels~~ Stages (See next Stage. Kohlberg 1-3) were strongly influenced either up or down by models. Those of the higher ~~levels~~ Stage (4-6) tended to follow their own judgment. Rothman's work seems to indicate that dependence of moral judgment action on moral judgment, depends on the moral level we have already retained. When at lower levels we are much more affected by the actions and opinions of others therefore by principles of social learning; when at the higherlevels we ten rather to follow our own cognitive understanding of the situation.

Ph.D Thesis Columbia University --get titel from my secretary Caroline 870 4318 List in index under Rothman with this info + flag.

At lower levels of moral development we might expect subjects to vary according to what the models advocate, either up or down because their morality is still situationally determined, but at the higher levels they should not show such wavering behavior. It is interesting to notve here, the way in which each theory gains some evidence in its favor, from subjects of appropriate age levels. Younger children behave as social learning principles suggest they should. Older children behavior as cognitive theory suggests they should.

But in talking of stages we necessarily move on to the work of Lawrence Kohlberg.

Pre-conventional morality

The first level in the pre-conventional level which corresponds roughly to Piaget's pre-moral stage. Kohlberg distinguishes the pre-conventional level into two stages. Stage 1 is the stage of punishment and obedience orientation. In this first stage of moral development, the child judges the goodness or badness of actions by their pleasure or pain producing consequences alone. He attempts to avoid punishment, and generally he defers to the superior power of his parents.

The second stage of the pre-conventional level, Kohlberg terms the instrumental relativist orientation. Here the child judges the goodness or badness of actions by whether they satisfy his needs. Occasionally he also takes into account whether they satisfy the needs of others. In this stage are the elemental beginnings of a sense of fairness, reciprocity and sharing. These, however, are always viewed by the child in physical way, in market place terms. "You can use my crayons if I can use yours." General formulations of principles of justice or gratitude are still, for the most part, absent.

At the pre-conventional level, the child's conduct is subject mainly to external control. He responds to outer pressures, from parents, other children, etc. His main motive is to avoid punishment, obtain rewards, and have favors returned. He feels punishment not because he has violated that he has done wrong, or is disapproved of, but merely because of its physical unpleasantness.

Conventional morality The next Kohlberg stage of moral development is the conventional level, which coincides roughly with the stage of concrete operations in Piaget's cognitive system. In the conventional level, morality is defined as performing good acts and living up to the expectations of the conventional social order and of other significant individuals (parents, teachers, etc.). At this level, the child goes beyond fulfilling good acts only because of the threat of authority. Rather, he tries to live up to certain

rules which these authorities propagate, that do not have some value in themselves. Control of conduct remains external in so far as the rules and expectations are still laid down by others. However, the motivation for obeying these rules has shifted somewhat. The child becomes concerned with others' opinion of him, with their praise or blame, and not merely with their power to physically reward or punish. He takes the role of others and respects their judgement.

Stage 3, the first stage of the conventional level, is the level of good-boy (or -girl) morality. At this stage, the child is oriented toward obtaining approval and helping or pleasing others. In judging others, he considers their intention, usually in terms of whether or not they conform to the rules and standards he accepts. At this stage, the child sees a good person as one who possesses moral virtues.

The next stage of the conventional level, stage 4, is the stage of law-and-order respect for authority and social convention. At this point the child is oriented to doing his duty, showing respect for others and authority, and maintaining the social order for its own sake. The rules, by this time, largely internalized the moral expectations laid down by elders and other significant others. He is also able to take the perspective of others in moral situations. And, thus, can show regard for their legitimate rights (according to the rules he accepts) and expectations. Finally, he believes, usually, in the over-all justice of the moral and social order, and expects that virtue will be rewarded. As Kohlberg has pointed out, most people in our society remain at the conventional level throughout their adult lives.

Post-conventional morality: The third level in the Kohlberg system is the post-conventional level of self-accepted moral principles. At this level the individual has gone beyond the perspectives of the authority of others and of society. He is attempting at this point to find his own morality based on principles that he himself determines. He may or may not conform with these standards which he sees as either those

or shareable by others. This stage, when it is reached, is associated with the stage of formal operations in the Piagetian system. It is usually reached some time in adolescence. Stage 5, the first plateau of post-conventional moral development, is contractual and legalistic in its orientation. The individual recognizes that rules are essentially arbitrary and conventional in nature. He accepts rules for the maintenance of agreement and social harmony. Duty is defined in terms of contract, avoiding the violation of the rights or will of others, and of the majority will or welfare. The thinking characterized by this stage of development corresponds somewhat to the ideas of the nineteenth century utilitarian, John Stuart Mill. This approach may be summed up, somewhat roughly, as the greatest good for the greatest number.

Stage 6, the last stage in the Kohlbergian scheme, is the stage of conscience or principle orientation. The individual goes beyond the acceptance of socially ordained rules, even the will of the majority, to principles of moral choice involving an inner necessity such as universality, compassion, or logical consistency. This is the stage of "let your conscience be your guide" and, therefore, is likely to vary greatly with each individual conscience.

✓

Kohlberg's original studies were done by [illegible] with boys aged 10 to 16. He presented his subjects with 10 hypothetical moral dilemmas in which obedience to legal rules, or the [illegible] of authority conflict with the needs or welfare of other persons. [illegible] to choose [illegible] [illegible]-authority-oriented [illegible] [illegible] the details of [illegible] [illegible] the reasoning behind his choice.

From this data, Kohlberg derived [illegible] moral attributes which he rated on a six-point scale [illegible] moral stage. every moral [illegible] [illegible] to [illegible] [illegible]

fair

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CAN PROBABLY DROP THIS

So parison of Kohlberg and Piaget

By this we mean set

Kohlberg, like Piaget, is a cognitive theorist. that he attempts to explain many theories of behavior and personality which are not exclusively cognitive in nature, by reference to their cognitive component. He believes that cognitive development can be characterized in terms of stages in the Piagetian sense. That is, a given level of cognitive development has a specific logical structure which is a total organization of a set of given mental activities. This organization of thought determines, or at least limits, to a large extent what mental operations the child can perform and what sorts of situations he can deal with. Differences between stages of cognitive development are not differences in degree but are organizational differences of form. Thus, development, as measured by capability for various tasks, is not linear and gradual, but rather proceeds by jumps.

Good idea drop

However, in examining Piaget's theory of moral development, Kohlberg has found that Piaget's two stages of moral development (autonomous and heteronomous) do not meet the criteria for stage that Piaget himself has proposed. For example in defining the autonomous stage, Piaget uses the dimension of peer vs. adult expectations. He maintains that responsiveness to peer expectations characterizes autonomous morality. Kohlberg claims that there is nothing inherently more autonomous or cognitively mature about taking a peer for a model rather than an adult. He notes that this trait does not vary with chronological or mental age and that what age trends do exist are absent in some national groups, such as the Swiss. Thus, it would seem that at least part of the definition of Piaget's moral stages is not rigourously even defined to meet the requirements of Piaget's own theory.

Kohlberg, therefore, in his own research has attempted to formulate stages of moral development that do meet the strict requirements for the use of the term stage. That is, they must represent structural

wholes and must be culturally universal. In constructing these stages, Kohlberg has made use of some Piagetian notions such as heteronomous obedience to adult authority and reciprocity of exchanges between peers, he has discarded others such as reliance upon peer's expectations and added others of his own, such as approval orientation. Each of his stages has a consistent character. While each of the stages he posits has an over-all structural character, the stages are not exclusively cognitive in nature. Rather they include both cognitive and affective traits (such as need for approval) that have the same structural aspects. While Piaget also recognizes that his structural schemata apply both to cognitive and affective (emotional) aspects of personality, Kohlberg is somewhat more explicit about the matter.

A study done by Lee (1971) explored the relationship between Kohlberg's measures of moral development and Piaget's measures of cognitive development. Lee administered a series of tests using Piaget's cognitive tasks to 195 boys from kindergarten through 12th grade in Worthington, a middle-class suburb of Columbus, Ohio. The Piagetian conceptual tasks included tests for conservation of mass, conservation of liquid, lateral discrimination, projected space, equilibrium of the balance, and projected shadows. Lee also gave these same boys a series of tests using Kohlberg's stories involving moral choice. He then examined the results to see if there were significant relationships between the measures of cognitive level and of moral development.

His results, by and large, supported Piaget's contention that cognitive and moral development do covary. His study showed that children functioning in the preoperational mode cognitively adhere to acceptance of authority in their moral conceptualizing, while children who were in the concrete operational stage employed the mode of reciprocity in dealing with moral questions. (According to Piaget, the notion of reciprocity of relationships, such as 'I am my brother's brother' is attained in the concrete operational

stage) Those subjects in the study who had reached the formal operational level of cognitive development tended to use higher social ideals as the basis for moral reasoning.

The Lee study thus showed a definite correlation between Kohlberg's moral levels and Piaget's cognitive stages. It also clarified a point brought up by Kohlberg concerning the use of the notion of reciprocity. Kohlberg had found that reciprocity was not age-related. Thus, he maintained that there was little evidence that reciprocity was a developmental cognitive trait. Although Lee's correlations between cognitive level in general and reciprocity in particular were low, they were still significant. Moreover, the correlation was greater in subjects between the ages of 5 and 10. Since, according to Piaget, reciprocity approaches a maximum at age 10 and fluctuates thereafter, and since it was noted that Kohlberg's own subjects were all between the ages of 10 and 15, Lee concluded that reciprocity may be a developmental trait also.

Kohlberg, in his investigation of moral development, has stressed the importance of role taking (that is, the ability to perceive and conceptualize the interaction between oneself and another through the other's eyes) somewhat more than has Piaget. [illegible] by one of Kohlberg's students, [illegible] (moral) maturity and the relationship between role taking ability and moral level in a group of children [illegible] by 10.

[illegible] Kohlberg's hypothesis is that role-taking is an essential skill for the development of morality. The ability to take the role of the other cannot exist outside the social situation. Thus, role-taking has an obvious social-interpersonal component. If Kohlberg is correct in his thesis that role-taking is crucial for moral development, it would follow that social experience and interaction is also important for moral development. This is not to be taken to mean that [illegible]

are not also an important aspect of role-taking, and hence of moral judgement. The cognitive component of role-taking, as Selman points out, while less obvious that the social aspect is still evident in the need to shift, balance, and evaluate perceptual and cognitive social information.

An example of the importance of role-taking can be seen in the performance of a four-year-old child's inability to make an advanced moral judgement in one Kohlberg's stories. The story concerned a man who steals a drug for his dying wife. A four-year-old lacks the ability to take the role of a desperate husband in both the cognitive general sense of being able to put himself in another's shoes, as well as in the specific social sense of having no conception of the experiences the role of the desperate husband entails.

The role-taking factor in the development of moral judgement is useful for the explanation of individual variation and cultural differences in the development of moral reasoning. According to Kohlberg, the greater the role-taking opportunites an individual has, the more will his experience facilitate his moral development. The more complex the individual's society and culture, the more role-taking opportunities will be open to him. This would account for the slower pace of moral development in rural and primitive cultures where social institutions exist at a simpler structural level. The factor of role-taking would also explain individual variation within a particular culture. Thus children with greater participation in peer groups and family structures are more likely to develop advanced moral reasoning earlier.

Selman (1971) conducted a study of the relationship between role-taking ability and Kohlberg's moral judgement levels among 60 middle-class children (10 boys and 10 girls from each of three age groups - 6, 8, and 10 years). He administered to his subjects two role-taking [illegible]

the results of the two role-taking tasks were controlled for age and IQ; the results of the moral judgement test were not controlled for age, IQ or sex. He analyzed the results of these tests for correlation between role-taking ability and moral judgement.

One of the role-taking tasks that was administered ran as follows. A child was assigned a partner of the same sex. He was shown two boxes. One box was printed 10¢, on the other it read 5¢. Within each box was the appropriate amount of money, a nickel and a dime. The child was told that in a few minutes his partner was going to come over and choose a box and take the money from it. The child's job was to remove the money from whichever box he thought his partner was going to choose and thus trick his partner. It was pointed out to the child that his partner knew that he (the subject of the experiment) was going to try to trick him. Thus, S's (the subject's) job was to predict which box O (his partner), knowing S's intentions, would choose. After S made his choice, he was asked why he thought O would choose that box.

S's responses to this question were analyzed into three categories. The lowest score was assigned to responses that showed no realization that the task required an understanding of another person's motives. This category consisted of subjects who could not or would not attribute any choice to their partner, as well as subjects who could no explanation for the choice they felt their partner would make.

The second level of role-taking ability was the case where the child showed an awareness that O could have a motive, but still did not indicate an awareness that O might also be cognizant of motives. Thus, for example, S could state that O would go for the box with the greater amount of money, but not be able to see that O and S were in a situation where O might be aware that S would think this and would thus modify his (O's) choice.

The highest level of role-taking scored for this task was

the case in which S showed an awareness both of O's own motives and the possibility of O being aware of S's motives. This is the stage of understanding the reciprocal nature of role-taking. For example, an S notes, "He will think I will take the dime box and so he will switch to the nickel box, so I better take the nickel box."

Selman obtained a positive correlation between results on the role-taking tasks and the moral judgement scale. Thus, here there was at least initial evidence to support the thesis that role-taking and moral judgement were related. The next step of the study was to retest, after a one-year period, 10 subjects who obtained low scores on both the role-taking test and the moral judgement scale. Here Selman found that only two of these subjects had attained the conventional level in moral judgement and that both of these children also obtained the reciprocal level in the role-taking tests. However, 5 of the 10 altogether had scores on the role-taking test. Thus, no subject raised his moral judgement score without raising his role-taking score although, although some raised role-taking without raising moral judgement. This result is consistent with the theory that role-taking is necessary for moral development. This hypothesis is also further supported by the fact that the correlation between role-taking and moral judgement is significant not only for the whole group but within each age group as well. Thus, it is shown that the relationship between the two scores is not simply due to the fact that they both increase with age.

In another study, Selman compared 23 delinquent boys with 9 non-delinquent for scores on both Kohlberg's moral judgement scale and on an assessment of their understanding of the Golden rule, a conventional moral principles that requires the ability to see things from another's point of view (reciprocal role-taking). Again, he found that those subjects who did not show role-taking reciprocity on the Golden Rule measure were at the pre-conventional level on the

Kohlberg scale.

What this research shows is that role-taking is an important determinant of moral level and can account for individual variations that the purely cognitive ~~Piagetian system~~ account does not explain. For example, it has been found that politicians who are quite capable of clever abstract economic and thinking (formal operations) still resolve questions of morality on the law-and-order conventional basis. Similarly, although it has been assumed that conventional morality depends upon the attainment of Piagetian concrete operations, it has been found that pre-conventional notions of equal exchange (Kohlberg's stage 2 of the the preconventional level) ~~has depend on concrete~~ operations. Thus, other than purely cognitive factors ~~must be~~ are operative in the development of morality. Selman, Kohlberg, and others have theorized that an important additional factor is role-taking ability which derives from the kind of social experience the child has had. cognitive judgment also

Transition Between Moral Stages The growth in role-taking ability, as defined by Kohlberg, is also a useful principle for explaining the transition from the pre-conventional level of morality to the conventional level.

As we have noted, in Kohlberg's system, the beginnings of reciprocity lie in the second stage of preconventional morality. At this stage the child performs approved actions in order to gain reward and avoids unacceptable actions in order to escape blame or punishment. Thus, a stage two child will refrain from stealing something from his older brother because the older brother will beat him up if he finds out. ~~While~~ While such a response does not represent true role-taking reciprocity (The child only worries about the consequences of his brother's discovery and does not really put himself in his brother's place), it does indicate the beginnings of awareness of the motives of others.

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Keep flagged til
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be checked. It's
now in
progress

With the coming of this awareness of others' motives, the child is in a position to ~~[illegible]~~ project (on the basis of his own motives and judgements) what the motives and judgements of others are. Eventually this process comes to include consideration of others' opinions of him and his actions. He becomes aware that others are judging him just as he judges them. He becomes concerned with people's opinions of himself and his actions, and , thus, he makes the transition to stage 3 and to the conventional level of moral reasoning. He becomes approval-oriented and seeks to be seen as a good boy, in Kohlberg's terms.

Thus, role-taking can be viewed as the mechanism by which the transition is made from one stage to the next during the ages when role-taking shows a dramatic increase, namely years 3 to 12. According to data gathered by Flavell, reciprocal role-taking is usually attained by the age of 11 or 12 years. Moreover, according to Kohlberg (1969), the conventional level of moral reasoning is usually attained by the age of thirteen. The relationship between moral judgement and role taking after the years of middle-childhood is unclear. It is known that morality may continue to develop, although it does not necessarily do so, to the post-conventional level. It is also possible that role-taking ability may also continue to develop. ~~However, it remains for role-taking development to be further researched.~~

Thus, One would not be justified in maintaining that role-taking remains the only mechanism of transition between the moral stages.

Role-taking Opportunities and Moral Development An corollary of the view that role-taking ability is crucial for the development of conventional morality is the thesis that high rates of social participation should predict high levels of moral development among children at the ages when role-taking is most dramatically increasing. The assumption behind this hypothesis is that social participation provides role-taking opportunities.

This hypothesis has been investigated by Keasey (1971). He selected as his subjects 75 boys and 60 girls from four 5th grade classes and one fifth grade class in a California public school. The subjects were predominantly white, lower middle-class children of average intelligence. This population represented the ages when there is the greatest diversity in moral level, ranging across stages 1, 2, 3, and 4 of the Kohlberg scale.

All of the subjects were administered the the Kohlberg moral judgment test and their scores were computed, thus yielding their place in the developmental scale. Around 2 months after the Kohlberg test was administered ratings were obtained for each of the subjects in social participation. They were each asked how many clubs and social organizations they had belonged to in the past 2 years and how many they were now a member of. Each child was also asked to list how many leadership positions he presently held. Peers and teachers were also asked to rate each child for leadership. Peer and teacher ratings for popularity were also obtained. From these results a composite picture of level of social participation was built up.

Keasey then compared each of the social ratings obtained with the late on moral development level. Positive correlations were found between all three ratings of social participation (self, teacher, and peer ratings) and moral development. Thus, at least for the conventional stages of moral development, the hypothesis that social participation is a causal factor (presumably by creating opportunities for role-taking) in moral development received experimental support. (One other interesting finding of this study was that the quality of social participation was more significant among the girls than was the quantity, i.e., leadership vs. mere participation.).

Social Aspects of Cognitive Development

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When we talk about social cognition what processes are we referring to? What are the observations and inferences we make about others? According to Tagiuri (1969):

> The observations or inferences we make are principally about intentions, attitudes, emotions, ideas, abilities, purposes, traits, thoughts, perceptions, memories -- events that are inside the person and strictly psychological. Similarly, we attend to certain psychological qualities of relationships between persons, such as friendship, love, power, and influence. We attribute to a person properties of consciousness and self-determination, and the capacity for representation of his environment, which in turn mediates his actions.

However, we are not born with the capacity to attribute these things to other people. Rather we develop the ability to make social inferences and attain social knowledge, much as we develop other cognitive abilities.

Based on the work of the many investigators inspired by and including Piaget in the field of non-social cognitive development, several investigators, among them Flavell (1968) and Piaget, have undertaken the study of the development of social cognition. As in areas of non-social cogntition, they have proceeded from the hypothesis that social cognition develops in distinct stages that are invarient in order. They have tried to discover what these stages are and have tried to formulate what event, processes, and mechanisms, both within the child and in the environment promote or inhibit the acquisition of the various sets of skills in each stage.

Piagetian Stages of Rule-following Behaviour

The parellel between cognitive development and social cognition can be seen in Piaget's formulation of the stages of social rule following. Piaget distinguished various stages in children's play with rules which were associated with the different cognitive levels - preoperational, concrete operational, and formal operational.

At the early, preoperational, level the child takes pleasure in

in purely egocentric motor exercise. There is virtually no structure in his play and no awareness on his part of the binding nature of rules. Play at this point is primarily individual and egocentric.

At a slightly later stage of egocentrism, still within the pre-operational stage, games have rules but still possess a very simple structure. Play is often improvised and the rules are often ignored. A weak relationship obtains between the players since violations of the rules are generally ignored and there is no winning of the game.

A slightly later egocentric stage, ages 5 to 8, develops as the child makes the transition to concrete operationalism. At this point, games develop more complicated rules which are rigidly adhered to and have the sanction of adult authority. Players are alert for deviations.

At the level of incipient cooperation, the game structure becomes much more elaborate. The rules are established by the group before the game. Individual variations are not permitted. Changing the rules depends on a group decision. The concept of winning develops, based on a relationship between players.

From this brief outline of game stages it is easy to see that social rule following behaviour in games parallel cognitive development and includes a number of cognitive aspects such as reciprocity and comprehension of conventions.

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The Components of Social- cognitive Development

Assuming that social cognition bears a close similarity to general cognitive development, we must then ask what are the detailed components of the social-cognitive stages and in what order do they make their appearance. SHOULDNT PP 11-14 go here SOCIAL COGNITION

Flavell, in a series of studies, most recently 1971, has undertaken to study these questions. He has posited four basic components of social cognition involving role-taking and communication skills. The first of these, Flavell terms existence. This refers to the child's basic knowledge that he or another person might possess some particular

but read this on PP11-12

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We beagn with general statements about the rule orientations of this age period, and then went on to illustrate them in that area where we all agree that rules are critical, morality. By and large the Piagetians seems to havesupportedtheir view that cognitive level is a precursor for moral level. Your understanding determines your moral judgment.

~~Theoretical~~ ~~While the~~ evidence for the view, that ~~in turn~~ one's understanding or cognitive is forced ahead by role taking experiences and demands, while the evidence is substantial, ~~does seem to be tenable~~. Both Piaget and Kohlberg have supported to such a viewpoint. What is interesting is that both of these theories are more explicit then on their dependent variable --cognition, than they are on their independent variable--social interaction. Put simpler or delete

However, we have many studies of the way social cognition changes over the age levels, and these provide us with important descriptions of the role taking shifts. Strangely enough many of these studies carried out within a Piagetian tradition , gives us a stage by stage sequence of events, but do not really tell us much about the role taking pressures that cause these changes to occur.

Similarly done! However many of the studies in the area of social cognition are of a descriptive nature ~~have to do with descriptions of role taking shifts over the age levels rather than~~ rather than providing info on why changes over the age levels occur. — (elaborate

or inlved any covert psychological process such as an intention or
e feeling. The second component, Flavell terms the Need component.
This represents the awareness that a given situation may call for
inference about one or more of these covert psychological properties.
The Inference component refers to the ability to make this sort of
psychological conclusion in particular cases. Finally, the Application
component refers to any subsequent activity the child might engage in
as a result of the inference that he makes about others - that is,
his ability to make use of his psychological knowledge in dealing
with people.

Flavell further subdivides the Existence component into two types
of awareness. One is the simple awareness that psychological entities
such as thoughts, feelings, ect. exist at all. Another, Flavell's
type 2, is the awareness that although other people may possess
psychological properties these need not be the same as those of the
subject at any given time. As the child acquires awareness type 2,
he gradually comes to think of his own psychological process as
distinguishable and potentially different from those of others. In
other words his role and viewpoint become differentiated from those
of others. Thus, a child who has mastered both types of awareness
involved in the Existence component would be able to understand
questions about others' mental processes and would be able to answer
such question in other ways besides merely listing his own. (The
absence of the second type of awareness is the same thing as Piaget's
cognitive egocentrism.)

The Development of Social Cognition in Middle Childhood

According to Flavell, the ability to make inferences about others,
based on the awareness of the existence of psychological properties,
shows a marked increase through middle childhood and adolescence. Al-
though pre-school and early elementary school children are capable of
making inferences about others, the nature of these inferences is

still very simple. Throughout middle childhood and adolescence, the richness and complexity (although not necessarily the accuracy) of the inferences a person can make about others' covert psychological states increases very markedly.

Two reasons for this are evident. First, with the increase of social interaction in middle childhood, the need to make inferences about others increases. Thus, the child is stimulated to make greater use of what inference-making capabilities he already has. Second, according to Flavell, the development of general cognitive skills such as logical ability probably gets applied to the social sphere. With the coming of concrete operationalism, the child is in a position to think more objectively about others, and to hold factors constant (conservation) in human situations as well as in impersonal situations. Flavell (1977) writes:

> The mind of the child at any given level of its development would hardly be expected to change its basic design features when turning from logical-mathematical or physical to social content.

Inferences of Visual Perception One area of inferences about others where the relevance of Piagetian cognitive abilities is most evident is in the field of visual perception. That is, what sorts of visual experiences can children at different ages and stages of cognitive maturity attribute to others. When can they take take the visual perspective of others in looking at arrays of objects?

Various researchers, including Flavell and Piaget, have constructed a variety of visual tasks to test various aspects of the development of perspective-taking ability. One such task is the famous "Three Mountains" test (Piaget & Inhelder, 1956). In this test, the child looks at a scale model of three mountains and is asked to imagine or represent the mountains' visual appearance from various perspectives other than his own. Piaget and Inhelder found that this task remained quite difficult even for 9 to 10 year-old children.

ADD Intentionality + Person Exclusion

Another task, even more difficult than the the Piaget task, was devised by Flavell et al (1968). They constructed an arrangement of three wooden cylinders of differents (non-linearly arranged) heights, each painted red for half its circumference and white for the other half. The subject's job was to reconstruct a given view of these cylinders, using a duplicate set. To solve the problem, he had to compute such facts as, that when the display is viewed from the side opposite his own, the middle-sized block will present its white side full face and will appear to the left and in front of the other two blocks. Only 8 out of 20 sixteen year-olds achieved maximum scores on this perspective -taking problem.

At the other end of the difficulty scale were the Picture and Eye Position tasks used by Masangkay et al(1970). The picture task consisted of six subtasks. The first was a situation in which a child is shown an 8"x10" white cardboard with a picture of a dog pasted on one side and a picture of a cat pasted on the other. He is shown both sides and asked to name the two figures. Then, the experiment, holding the cardboard vertically between himself and the subject asks what the subjects sees and what the experimenter sees (dog and cat, respectively). The five other tasks consisted of a similar arrangement of the following displays - apple-apple, apple-nothing, duck-duck, bird-nothing, and cat-dog (the reverse of the original display).

In the eye position task , four toys were suspended in various positions around the subject who was seated on a rather high chair. An airplane was hung from the ceiling above slightly above and in front of the subject's head, a boat and a truck were positioned on the walls to his left and right respectively, and a block was placed on the floor just in front of his feet. The experimenter was seated four feet directly in front of the child at his eye level. After pointing to each object and having the child name it she said, "This time, instead of pointing I'm going to look at the toy with my eyes, and you

tell me which one I'm looking at." The experimenter then closed her eyes and moved them into position (so the child could not observe the movement) and opened her eyes. She maintained her eye position until the child responded by naming the object he thought she was looking at.

In the picture tasks, all 26 two-year-olds tested answered correctly on the control subtasks (where the images facing the child and the experimenter were the same), while 7 out of 16 two-year-olds and 9 out of 10 three year-olds answered correctly on the subtasks where an inference about the other's perspective was clearly involved.

In the eye position tasks 7 out of 16 two-year-olds and 7 out of 10 three-year-olds answered correctly on 6 or more of the 8 trials given. Thus, the eye and picture tasks were about as easy for two-year-olds as the Flavell perspective task was for sixteen-year-olds. How is this age gap to be explained?

Developmental Levels of Perspective Taking In order to account for these results, Flavell, using the work of Piaget and some of his own previous work, constructed a number of levels of perspective-taking ability.

Level 0, the lowest type, occurs in Piaget's sensory-motor (pre-operational) stage). Level 0 knowledge is composed largely of sensory-motor type expectancies of the child as to what he will find as he moves from place to place in his environment. The child is concerned primarily with what objects he will find, not with their appearance from different perspectives. Thus, in the picture task, the child can anticipate that he will encounter the other picture if he goes around to the experimenter's side of the cardboard. However, he has no real ability to symbolically represent (imagine) what he will see in the future or what the other (the experimenter) is seeing in the present. His inference is based on his own action. The child can anticipate seen objects (seen by himself), but cannot represent to

himself anyone else's seeing activities or experience.

At level 1 (generally, the early school years), the child becomes capable of symbolically representing the acts and experiences of others and himself in the visual sphere. However, he is still only concerned with the looking at and seeing of real objects. He, as yet, has no real notion of different views of the same object. Thus, the child at this level will have difficulty with the three mountains test. He will not comprehend the question "How do these mountains appear to us from where I'm sitting?" adequately.

With the attainment of level 2 , however, the child decenters from his exclusive concern with the objects seen and is able to represent to himself the activity of seeing in himself and in others. He becomes aware of the inner experiences, the phenomenological fact of views of or from different perspectives on an object. Thus, the child at level 2 (usually when he is in early childhood) is able to represent to himself (although not necessarily accurately) the other's visual experience of the three cylinders in Flavell's perspective-taking task.

Finally Level 3 is a further extension of the type of inference employed in level 2. "Here", in level 2 the the sizes of the ~~figures~~ objects seen from different perspective are vague, real-size centered, in level 3 the individual is able to represent a picture of the other's visual image of a display of objects in size perspective. That is, he can decenter from the real size of the objects and imagine them the way an artist would. Given that perspective drawing is a relatively late invention of Western art, it is not surprising that very few people are able to this with any accuracy. An understanding of the correct picture of an object in display of objects in size perspective probably is not consistent with the intuition to formal operationalism.

The findings of Laurendeau and Pinard (1970) are of considerable interest concerning the question of the formal levels of perspective-taking

ability was reached. In their sample, 90% of the 4 1/2 year-ol ,
52% of the 5-year-olds, 50% of the 6-year-olds, and 17% of the 7-year
olds were found to be at Level 0 (on a scale similar to Flavell's and
to Piaget's) in their performance of the three mountains task. That
is, they were at the stage where they could not comprehend the meani
of the questions asked.

From the way they behaved, it seems that all of those who were
at stage 0 did understand that the other looked at and saw the three
mountains (level 1), but they had no conception that he saw them in
a particular way. Children older than 7 years, seemed, on the whole,
to have at least minimal awarenees of the existence of another's per-
spective, although there was still a high degree of egocentrism and
mistakes in inference.

Other Aspects of Social Cognition

In addition to perspective taking a number of other aspects of
social cognition have received treatment by various developmental and
social psychologists. One study by Baker (1942) studied the extent
to which school children of different ages listen to each other
and deal with what the other person is saying. In this study, class
discussions of elementary school children were evaluated for respons
unrelated
that related to what ~~the previous~~ earlier speakers had said, responses that
introduced a new topic but seemed to be suggested by something previ
ly mentioned, and responses that were a logical continuation of a
topic previously introduced. In grade 2, 37% of the responses were
unrelated, [illegible]% were suggested by a previous speaker, and 4% were a
logical continuation of a topic.. The percentages for grade 4 were
24% and 43% respectively, and for grade 6, the percentages were 23%,
33% and 44% respectively. Thus, the expected relationship between w
awareness and attention paid to peers (as measured by the study)
found.

note however study by Mueller cited p. Chapter 10

Add with Mueller example (Chap 10)
reference back to Ch 10.
Argues this depends very much on the situation. Class discussions may be more egocentric tasks for

Check ch 10
to see if
still included

Role-taking One of the key abilities that underly such communication skills as carrying on a discussion is role-taking. As mentioned previously, the ability to take the role of the other in any given situation, involves the ability to differentiate between one's own perceptions and feelings and those of the other. Thus, it requires decentering from exclusive concren with oneself. Role-taking also involves the concept of reciprocity - in the case of communication, the realization that the other must make sense of what the self says and vice-versa. These realizations depend on the awareness of the existence of psychological properties, the need to use them in a given situation, such as a class discussion or a one-to-one discussion, the ability to infer from the various cues in the situation the particular state of the listener, and the ability to modify one's own behaviour using these inferences as a guide.

Rules and Peer-Group Interaction

Another important area of social skills involving cognitive developments is the development of rule following behaviour. As has been noted above, rule following goes through three distinct stages. First, the child is highly individualistic in his play. Although he may imitate the practices of his elders, he does not really understand rules or why they exist.

The second stage develops when the child begins to want to play in conformity with rules, which are still imposed from the outside. This comes about via imitation or verbal exchange and involves a number of the cognitive abilites, we have dealt with such as role-taking, reciprocity, perspective-taking, etc. The consequences of rule following in children from 5 to 8 years can be seen in the types of societies they form . At this age, the group is all-important; the individual does not count. What matters are the rules and activity of the group. Little distinction is made between self and group. Middle childhood is the period of conformity par excellence.

Later, starting around the age of 10, the child begins to be aware of the arbitrary nature of rules. He realizes that they can be changed by himself and by others - that they are the result of a shared agreement. This realization presupposes the differentiation between self and others, and self and group that is characteristic of preadolescence and adolescence.

However, we should note that this development of increased awareness of self does not represent a return to the earlier egocentrism. Rather it is the awareness that one is a self operating among many other selves who share some of one's attributes and also have differences. This development, in both play and other aspects of social life, comes only with the ability to decenter both from oneself and from the group.

Role Differentiation Along with the increased differentiation between self and other and self and group goes an increased differntiation of roles that one can play in social activity. The group ceases to be monolithic, but rather becomes more differntiated and articulated in its functioning.

A good example of such role differentiation is the age change in games. In a 1971 study, Sutton-Smith points out that in children's games of the earliest age level, there is likely to be little differentiation in roles. Usually, there is a central person and an undifferentiated group (as in hide-and-go-seek, chain tag, stoop tag, and cross-tag). The central person as a great deal of power conferred on him not because of skill but by virtue of the role. The other players are fairly powerless and undifferentiated.

From this level games evolve to the point where the role of both the central players and the other players becomes more differentiated (duck on a rock, Simon-says-do). This usually begins around 10 years. After this point, there is increased development in the direction of full-fledged team games and sports, having variegated roles and func-

tions, such as pitcher catcher, etc.

The evolution of games as children grow older parallels the evolution of their groups from relatively primitive undifferentiated ~~aggregations~~ mobs to articulated and functionally differentiated systems.

Interpersonal Perception

Emotional Understanding

Up until now our discussion of social cognition has been focused primarily on perspective-taking and role-taking. We have seen how the concrete operational child is able to recognize and make inferences concerning another's visual perspective and also how the child in middle childhood is able to attribute intentions and awareness of intentions to others. An important aspect of attributing motivations to others is an understanding of emotional causes of behaviour. The ability to recognize the existence of another's emotional state and to make inferences about it is a key ability in social life. We would expect that this ability, too, would show marked development in the middle-childhood years.

A study by Whiteman (1965) investigated the question of how and when children recognize the emotional causes of their own and of others' behaviour. Whiteman's theoretical basis for his study came from two sources. First, the subject matter that he studied concerned children's awareness of and ability to identify mechanisms of personal adjustment. These mechanisms include projection of emotions or traits possessed by the subject onto other people, rationalizations (excuses for behaviour), displacement of emotions such as anger, etc. onto inappropriate objects, wishful dreaming, denial of emotions that the subject evidently has, repression of unpleasant thoughts or memories, and regression to earlier stages of emotional development. These concepts come from the psychoanalytic approach to human development.

At the same time, Whiteman had use of Piaget's general theoretical insight that with the attainment of concrete operations, children are able to decenter from the obvious overt behaviours of others to the less obvious covert motivations that underly their behaviour. Accordingly, he helped children at the ages of 5-6 years and children at the

ages of 8-9 years show striking differences in their ability to comprehend physical causality. Therefore, Whiteman reasoned, they should also reveal age differences in their understanding of psychological causality.

The subjects in Whiteman's study were 21 East Harlem kindergarten children (of both sexes) and 21 third graders from the same school. Each children was matched with a third grader of the same sex and IQ rating. The average IQ for each group of children was 101. All of the children were balck of Puerto Rican.

Whiteman's method was to conduct interviews with child and tape record their responses to questions concerning each of seven stories. Each story illustrated a different type of adjustment mechanism - that is, displacement, wishful freaming, projection, regression, repression, rationalization, and denial. The experimenter prefaced each interview with instructions to the child as follows:

"I'm going to tell you some stories about a little girl (boy) named Jane (Johnnie). In each one of these stories Jane (Johnnie) does something different from what she (he) usually does. I want you to tell me why she (he) did it."

The experimenter then proceeded to tell the first story about how Jane's mother promised her ice cream for desert but then forgot to buy the ice cream. Then after supper Jane did something she had never done before - she spanked her dolls. Why did she do this?

(This story illustrates displacement of anger from the appropriate object - the mother- to the dolls.)

A second story concerned a new pair of gloves that Jane's mother had bought her. Jane was warned not to lose this pair as she had lost the last pair. But, one afternoon, Jane lost the gloves coming home from school. Although she knew she had to tell her mother, she forgot to do so. When she went out to play she told her friends she had lost

The Development of the Peer Group

As the child's capability for social perception grows, so does his awareness of and need for the sense of belonging to a group. Thus, with the coming of middle childhood, the peer group increases greatly in importance.

The peer-group provides the child with an opportunity to learn how to relate to people of the same age, how to deal with hostility and dominance, how to lead and be led, and how to share. It also helps the child in dealing with social problems (by his observing that his friends may have similar problems to his own). The discovery for example that other boys or girls are interested in sex may help to relieve tension or guilt. However, the peer group can also cause problems for the unpopular child.

In general, the peer group helps the child develop a concept of himself by providing him with the experience of how others react to him. He learns how to modify his behaviour in order to achieve success or win friends. It provides a sounding board for the child outside of the limited sphere of the family.

Types of Peer Groups

Sex-based Groups

One of the most frequent kinds of peer group among children in middle childhood and preadolescence is the group based on sex. Throughout early and middle childhood children tend very strongly to associate with same-sexed peers. This pattern continues up until adolescence when opposite-sex friendship makes its appearance.

One reason for this development is cultural. Children are encouraged by their parents either directly or indirectly to associate with other children of the same sex. Those children who do not do so are often regarded as strange by other children and by parents. The society (at least, present day American society) tends to impose stereo-typed sex roles on children, and having children in middle childhood associate exclusively with same-sexed peers is one way

of facilitating this sex typing. Thus, boys tend to play "masculine" games with other boys, that involve much physical exercise. Also boy's gangs are sometimes tolerated when they engage in collective mischief because "boys will be boys." Girls gangs tend to be subtler, and the occurence of collective mischief among girls is rarer.

Racial Division: Another important division among children's peer groups are racial distinctions. In ghetto areas, naturally, the children in a peer group will tend to be of the same race as there may be no children of other races in the area. In situations where there are children of more than one race, however, racial cleavages have been found also.

In relatively segregated settings it has been found that majority group children tend to stick together more than do minority children (Morland, 1966). In more integrated areas, the results tend to vary somewhat. Thus, in one urban elementary school in which blacks outnumbered whites 10 to 1, white children were found to stay together more than the majority children (Rabbie, et.al., 1958). Similarly in another study (Lambert & Taguchi, 1956) it was found that Oriental children were found to have more own-race cleavage than their majority white peers. However, it has also been found in Massachussetts and Hawaii that own-race cleavage is stronger among majority children than it is among minority children in some mixed settings (Morland, 1966). One possible explanation for these conflicting results is that when faced with a threatening situation, minority children will tend to band together for mutual support. However, when the situation is less threatening, it may turn out that the majority seems to stick together more (especially since there is a greater statistical chance of majority children choosing each other as friends).

Social Class Divisions: Most researchers support the conclusion that lower class children are less popular in mixed peer groups than upper or middle-class children. However, the evidence on this point is somewhat sketchy. Cannon (1927) and Elkins (1951) reported a direct rel-

The mechanisms of peer group norm enforcement in early and middle childhood center on two basic processes. The first is the tendency to imitation found in pre-school children. Second is social pressure that plays upon the tendency toward conformity that develops in middle childhood.

According to social learning theorists such as Miller and Dollard (1941), imitation of others' behavior is reinforced from early childhood onward. Although this may be the case, such a statement does not predict the age trends in degree of conformity or outline the various types of imitative behavior and when they occur.

The theories of Piaget provide a somewhat more developed basis for predicting and explaining social imitation (and, consequently, peer influence) as a function of age. According to Piaget in the preschool years (the preoperative stage) the child has no clear conception of rules. Thus, although he will imitate elders' behaviours, he does not really understand the reasons behind these behaviours.

However, [illegible] social [illegible], [illegible] develop [illegible] [illegible] rules, [illegible] particularly the notion of [illegible] child begins to [illegible] rules. [illegible] to play in conformity with rules [illegible] from the outside, from others. Thus, he becomes increasingly susceptible to the pressures of others to conform to group rules. [illegible] childhood. Thus, [illegible] ~~[illegible]~~ explicit and sometimes rigid conformity to group norms.

rigid

Several empirical studies [illegible] of [illegible] of conformity. In one study, [illegible] (19[illegible]) [illegible] the degree of [illegible]

[illegible]

In [illegible]

[illegible]

Influences on the peer group

Having noted some of the peer group's influences on the individual child, we will now list some of the factors that affect the nature and existence of peer groups. Among these are the effects of physical proximity, competition and frustration, leadership styles, and personality types.

The Sherif Studies of Peer Group Behaviour

A series of experiments conducted by Sherif and Sherif (1953) and their colleagues studied some of the above mentioned factors in peer group formation. In one of their studies, the following hypotheses were tested: (1) when individual children are brought together and perceive that they share a common goal, the resulting group will develop a hierarchical structure (leaders and followers), role stability patterns, and a division of labor; (2) the group will develop shared attitudes and norms; and (3) if two such groups are brought into considerable interaction involving frustration and competition, intergroup hostility will occur.

The Sherifs recruited two groups of middle-class, white, Protestant boys in preadolescence and moved them to a summer campsite. In stage I of the experiment, while the groups lived apart for a week, interactions in grouping and the development of friendships were observed. Then, in stage II, the natural groups were split. Friendships were broken and the new groups were aligned on the basis of stability and personality factors.

Stage II lasted for five days during which time the group occupied separate living quarters and had their own activities which were conducted with relatively little adult supervision.

Results from this study supported several of the hypotheses concerning peer group behaviour. Firstly, a clear hierarchical structure emerged after five days in both groups. The two most [illegible]

the bottom of the status scale each other first. However, one important difference between the two groups [illegible] itself evident. The Bull Dogs appeared to be more closely knit because there was a relatively even distribution of its members over the status scale. The Red Devils on the other hand was made up of a few boys at the top of the scale and the remainder in relatively low status positions. This group showed less solidarity.

Each group acquired rules, nicknames, and punishments developed spontaneously by the members themselves. Friendship choices now shifted from the [illegible] alignments to in-group friendships. Thus, the second hypothesis also received support - namely, that groups will tend to develop group norms.

The Sherifs' explanation for these phenomena is that over time the peer group becomes a source of satisfaction or frustration in itself for its members. Hierarchies and norms maintain the existence of the group. Thus, incentives and punishments arising from peer interaction create the norms that serve to maintain hierarchies. These norms, in turn, maintain the existence of the group which is a continuing source of reinforcement to the individual.

In stage II of the experiment, the two groups were brought together for a series of competitive contests. However, at this point an interference resulted. One group consistently won while the other group consistently lost. Experiences of frustration for the losing group resulted in a series of intergroup feuds. The solidarity of the losing group disintegrated and the more democratic group was more concerted in its antagonism to the opposing group. (This last result may be due to the fact that members of the former group, having less division originally, could take out their frustration more readily on the out-group members.)

In another experiment (Sherif et al., 1961) it was found that [illegible]

the general solidarity of each competing group did not decline during the competition, the internal structure of both groups did undergo some change. In particular those boys who excelled in the competition tended to become leaders even if they had not been so initially.

In a second stage of this experiment, the researchers tried to engineer situations where the two competing groups would have to cooperate on a vital project such as restoring the water supply. Their prediction that intergroup conflict and stereotyped evaluation would decrease (and cross-group friendship increase) was borne out by the results.

Thus, the series of group experiments conducted by the Sherifs points up a number of important influences on the nature of peer groups. First, a shared goal, as well as physical proximity, is important for the formation of any peer group. Second, competition between two groups can bring out intergroup hostility. Finally, the [illegible] nature of a given peer group, as well as relations between peer groups, is strongly affected by situational and environmental factors.

Leadership Styles

Another important influence on group behavior is the kind of leadership the group has. One study by Lewin, Lippitt and White (1939) and subsequent studies by Lippitt and White (1943, 1960) examined the effect of different adult leadership styles on groups of 11-year-old boys. Lewin and his colleagues broke adult leadership down into three types -- democratic, authoritarian, and laissez-faire. They then tried, via observation, to determine the effects of each type of leader.

Their major findings were as follows. First, they found that authoritarian leadership produced either aggressive or apathetic [illegible] all the [illegible] in the group. [illegible] intergroup and tension, [illegible] with authoritarian leaders were more aggressive [illegible] leaders.

Another major area of difference between groups with different types of leadership was in the area of requests for attention and approval. Lippitt also found that members of democratic and laissez faire groups tended to request attention more than did members of authoritarian groups, perhaps because they were more free to do so. It was also found that interpersonal friendliness did not vary with the type of leader although there was less of a collective "we" feeling in authoritarian groups.

Finally it was found that work motivation was low in authoritarian groups when the leader was absent, while this drop did not occur in the absence of democratic leaders. Also work-related aggression by children were lower in authoritarian-led groups.

In general there was a wider range of individual differences in behaviour and attitude in democratic groups than were found in authoritarian or laissez faire groups.

However, it is not totally clear that these results are invariant. What happens in groups with these types of leadership. For one thing, the authoritarian leaders tended to be somewhat self-reliant. It might be interesting to study what would happen under a friendlier, more benevolent dictatorship. Also, the adults who played the authoritarian role in these studies were actually outside the group. What would happen with authoritarian leaders who were committed authoritarians is a matter of some interest. Finally, the children studied came primarily from democratic homes, and this fact might have some bearing on the results obtained.

Another study (Lippitt, 1939) investigated the effectiveness of participatory versus non-participatory leadership. The test was the effectiveness of situations imposed in different ways on children's aerial book preferences.

Fifth and sixth-grade children were exposed to biased views about the desirability of certain aerial books. One-third of the subjects

were rewarded for compliance with the sanctions (i.e., they were issued free movie passes) and another third were punished for non-compliance (i.e., they had their movie passes withdrawn), while the remaining third experienced no sanctions at all. Compliance among the children who experienced sanctions was similar for both types of sanction. Change in attitude among these children was greater than among those in the control group. However, in the reward and no sanction groups, participatory leadership produced a greater change in attitude than did the lecture method. On the other hand in the group that was punished, more change occurred via lecture than through participatory leadership. Thus, it is seen that types of social sanctions must be [illegible] with leadership style to be maximally effective.

Cohesiveness of Peer Groups

The cohesiveness of informal peer groups has been shown to increase with age. Thus, [illegible] (1960) found that elementary school children who are engaged in solving a common problem show more other-directed actions than do preschoolers. Moreover, the [illegible] tendency to congregate in informal groups is positively related to age.

Another influence on the cohesiveness of the group is the degree of cooperation. In one study (Stendler et al., 1951) three groups of seven-year-olds were examined for cohesiveness. The manner in which rewards were granted to the children varied from day to day. The first day children painted a mural and were told that each child would be given a reward if they all worked together to make a good picture. In the following sessions, the reward was promised to the individual child who produced the best picture. The results show that positive behaviours (friendly conversation, sharing) exceeded negative behaviours (boasting, depreciation) during all cooperative work sessions, while the reverse was true in competitive situations.

Another interesting finding concerning group cohesiveness has been

on the relationship between cohesiveness and performance. Lott and Lott(1966) found that cohesiveness affected children's performance on verbal learning tasks according to the ability of the children in the group. Among high-IQ 4th and 5th graders those in cohesive groups did better on a verbal learning task than did those in non-cohesive groups. However, the result obtained for low-IQ children was found to be precisely the opposite, although less markedly so. The investigators hypothesized that interpersonal attraction (that exists in cohesive groups) is an incentive motive. When the task is easy (as it would be for high IQ's) this motivation could be expected to improve performance. However, the same motive would impede performance where the task is difficult. Although it is not totally clear why this latter process should take place, the study nevertheless does show that cohesion in conjunction with other variables is related to performance.

One other study dealing with group cohesion related cohesiveness and, more generally, degree of social experience are positively related to moral autonomy (Linhorn, J., 1971). In this study 80 8-year-old subjects in 16 cohesive and 16 non-cohesive groups of 5 were able to compete for prizes on four prayer-and- spell tasks, ensuring that that their cheating could be detected. The same procedures were repeated with 5-year-olds.

It was found that 5-year-olds cheated more than 8-year-olds. This supports Piaget's finding that moral autonomy increases between the ages of 5 and 8. Moreover, at age 8, but not at age 5, cheating was an inverse function of group cohesiveness. Thus, again a Piagetian thesis that group ties in middle childhood(but not in early childhood) produce moral autonomy was supported. Finally cheating was found to be an inverse phenomenon of degree of social experience at age 8, but not at age 5. Thus, the Linhorn study confirmed the general Piagetian view that moral development is related both to change in cognitive level (middle childhood's power to operationalize vs. early childhood's

pre-operationalism) and to the accumulation of social experienc e.

The Culture of Peer Groups

Any study of peer groups in middle childhood must include an account of the culture transmitted by these groups. The existence of a tradition of children's games rhymes, and folk-beliefs is remarkable considering that there are as many as fifteen generations of children (as compared with three or four adult generations) per century. The continuity of the culture of childhood (some of it dating back to the Middle Ages and even before to Roman times) is thus quite an historical accomplishment. For children learn most of their childhood games not from adults but from slightly older children. Thus, the peer culture of middle childhood is a culture apart from the adult world. It is a spoken culture, not a written one. Yet it has survived.

'One reason for the staying power of children's culture is the child's love of ritual. As Piaget has pointed out, children upon reaching the stage of concrete operations become preoccupied with the rules of the game and often take these rules as immutable, natural facts. Also, this is the age (middle childhood) when conformity is at its height. The child, therefore, will follow the rules very carefully down to the last detail. Thus, nothing is lost and, as a result of children's zeal, the culture is transmitted whole from one generation of children to the next.

A possible reason for the child's love of ritual is that it gives him the feeling that he can control reality. Rituals for the children represent [illegible]. They [illegible] for the [illegible] child [illegible] help in dealing with the world. They also provide the child with a way of belonging to the group. By following the rituals of his group, the child shows to himself and to his peers that he belongs. Often children who rebel against the rules handed down by adult authority will accept rules imposed by their peers, probably out of thi

need for belonging.

Some result of the particular [illegible] have [illegible] deal with the [illegible]. For [illegible] the [illegible] study of English children (1939), secret languages serve the function of enabling children, who are usually underlings in their dealings with adults, to converse in a manner that outsiders cannot understand.

Influences on Types of Play

Age changes in games Among the important influences on types of children's play, age changes are most obvious. Sutton-Smith (1971) in an analysis of age changes in play points out that there is a lovely orderliness to games that involve a central-person and many other participating group members (such as hide-and-go-seek, or 'It' tag). With increasing age, the role of the central person becomes more differentiated from the role of the group members.

The general kind of play changes, too, with age. Fantasy play is very popular in early childhood (riding back of food, toy soldiers, bandages, puppets, etc.). Between the ages of [illegible] 11, [illegible] acting and trading is popular (as, for example, baseball cards, stamps, marbles, sea shells, paper toys, etc.)

Also, at this time (8 to 12), building becomes a popular form of play (i.e. -ing, the construction of huts, treehouses, etc.

Personality Influences Another factor that influences choices of games among children is the child's personality. Sutton-Smith (1971, 61, 64) has analyzed competitive games into various types and has correlated choice of these types with various personality traits.

Four main categories are employed in the analysis of games. These are games of chance, games of pure physical skill, games of pure strategy, and games combining physical skill and strategy. Correlated with each type of game is a given type of player, "Contenders" who

wh rely on luck, "potents" who rely on physical strength, "strategists" who rely on mental skill, and "potent strategists."

...ong children of ages 8-12 Sutton-Smith found that the strategist and potent strategists were higher in socio-econo ic status and in intelligence than the fortunists. They were also described by their peers as better sports. Boys who were "potents" were described as more bossy and quick to anger.

Sex Factors in Game Choice According to Sutton-Smith and Rosenberg (1961) the game preferences of boys and girls are more similar now than they were 20 years ago. In particular there has been an increasing incorporation of masculine preference by females.

Other Cultural Changes In addition to the shift in sex preferences, various other cultural changes in games have occurred in the past 30 years. Formations, for example, less games involving kings, queens, rulers, etc, as these figures became increasingly distant part of the past. Singing, dialogue and rhyme games have also declined although children are more verbally witty now since they are allowed to participate more in family discussion. Because of the decline ... in physical punishment (at least in the middle-class) and the increase in psychological discipline, cruel jokes on the verbal level are somewhat more common than they were thirty years ago.

The Purpose of Play In general, we might say that child's play, and the child's subculture generally, reflect the surrounding adult world and provide children with ... of dealing with it. Through play the child has the opportunity to try his powers, to compete in peer-defined rather than adult controlled situations, and to learn how to accept defeat without excessive loss of face (how to be a "good sport").

65 don't [illegible] relationships of sections

We have in a sense moved backwards causally in this chapter. First we discussed moral development, then subscribed to the view that this was based to a great extent on cognitive development (at least this is what the Piagetians have argued, though there are contrary views, which suggest parental nurturance and example are also critical); but cognitive development in turn seems to have an important basis in role taking. In the chapter on social cognition which showed the generality of the shifts which occur in social cognition throughout childhood. And now in the section on peers we have shown the coercive influence of peer group pressures and norms. It does seem very supportable that such peer demands and pressures are themselves the ultimate source of moral development.

and which we have taken up in Ch 13

Though here as elsewhere one has always to exercise the caution that any area of functioning (such as moral judgment) takes on its own logical autonomy, and some of the growth that takes place in it, has quasi intrinsic logic. Just as we saw that the higher stages of morality seemed less susceptible to social influence.

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EXHIBIT 90

Ex. 90

Lawrence Locke
2/22/72 Rewrite: 3/17/72

Chapter 5

Physical Growth in Infancy

In this section, we will explore the first two years of the infant's life -- from birth to the brink of the "terrible twos." In terms of behavior, Chapters 5, 6, and 7 will follow the child from his first lusty, outraged cry in the delivery room to his first spoken sentence. Just about the time he begins speaking of course, he also is running about the house, scuttling up stairs, scaling sofas and climbing chairs. Because the child begins talking and walking near the end of his second year, we consider the time from birth to two years of age as a convenient unit for study. The chapters in this section will deal with the physical, cognitive, and social development of the child during his first two years. Although we will deal with these three aspects of growth in three separate chapters, the aspects themselves are not separable. In life, a child's body, intellect and personality develop together and each affects the other two.

As a psychologist observes a newborn infant, he asks himself several questions. What faculties of body and behavior does an infant have when he first enters the

world? What is the state of his behavior system? How does his experience -- and which experiences -- change his state? Does the baby's later behavior grow out of an inherent potential? If so, to what degree?

In the present chapter on physical growth, we will follow the development of the child's sensory capacities, his perception and his motor development. First, we will consider the responses he can make at birth -- such as crying and kicking -- and then those he develops later in his infancy, either from maturation of his various body systems or from learning. INSERT → one

The State of the Newborn

If we wanted to throw bouquets to the newborn infant, we might preface them with, "You've come a long way, Baby" -- a long way, that is, from the popular sixteenth-century notion of the infant as a rather insensitive and bumbling being. But the infant's detractors were not confined to the sixteenth century. In the twentieth, one researcher labeled him "neurologically insufficient" (Flechsig 1920). Another -- on the threshold of this century -- called him "cognitively confused" (James 1890). In 1905, Freud found the infant "narcissistic", and Piaget (1927) described him as

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not true of the Piaget of 1940's - who showed how much the baby learns.

"solipsistic" -- that is, totally oriented to himself. Perhaps the most unflattering assessment, though, was voiced in 1891, when an experimenter named Hall delivered the pronouncement that the human infant is merely ugly. In the years since, the infant has moved up several notches in the regard of psychologists. The infant deserves it. In what other terrestial species could you find a helpless, bleating mammal that, within less than 70 weeks, has become a remembering, discriminating being who walks on his hind legs, speaks complete thoughts and carries on a complex social life with his peers and parents?

The average child of eighteen months is a free and capable agent. He can walk, perhaps even run. If he is especailly well-developed he can go up and down stairs upright rather than clambering on his hands and knees. He can climb into a chair for dinner, and just as likely, stand up on it and rock a little. He can jump off small rocks and step over toys, kick his teddy bear and drag a doll by the hair. He can pull on his socks and some of his other clothes -- though zippers defeat him -- and step into his slippers -- no shoe-tying yet. With urging, he can collect his toys and dump them into a chest. He can drink from his sister's china tea set without breaking a cup, and maybe without spilling

a drop of his apple juice. He knows his name is Alex, but Alex what? -- he can't remember. He can name his dog, his bike, his ball and (plastic) bat. He knows his coat from his hat. He can sit or lie and ~~fill~~ irregularly draw a paper with pencilled squiggles, a few ~~straight~~ arc lines and perhaps one or two deflated and open circles.

The Infant's Senses

From his first breath, the child is remarkably well-equipped for life. He can see, hear, smell, touch and feel pain. All his senses, except taste, are operating immediately, and even taste develops rapidly. From his first moment outside the womb, the human infant can "feel most stimuli that adults experience. Unlike many mammals -- the puppy, for instance, born deaf and blind -- the senses of the newborn child are in almost ~~perfect~~ good "working order."

The Infant's Reflexes

The newborn comes into the world with a number of well-developed reflexes. Some of these -- the sucking reflex, for example -- are needed for survival. Others, reflexes which are quite complex, ~~simply show~~ are geared to current the state of his nervous system. Seemingly sophisticated reflexes

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Yes. Startles, for example, have a regular relationship to level of neurological activity.

appear very early. An infant two hours old will follow a light reflexively, assuming it is not moved too quickly. The pupil of his eye will dilate in darkness and contract in light -- the pupillary reflex. Further, his body will shudder at a loud noise -- the startle reflex. And if you touch an infant's cheek, he will turn rather quickly to that side, demonstrating his rooting reflex, which brings his mouth into position so that his sucking reflex can draw nourishment from breast or bottle. If you press the infant's palm with your finger, his fingers will close around yours -- the grasp reflex. Many an infant's grasp, in his first few weeks, is so strong -- and his body so light -- that he can hang by his hands for a minute or so, or inadvertently tear off your table cloth. He also can cough, cry, vomit, and wave his legs and arms. Lying on his stomach, he can raise his chin and turn his head. He can smack his lips noisily and munch his fingers -- especially later when he anticipates a feeding. Also important is his withdrawal reflex, which makes the infant recoil from pain, whether the source is an overheated nursing bottle or an open diaper pin. His jerking back from the pin

Second page

or spitting out of the hot milk is soon followed by his shocked cry, which is an outlet for him and a clear distress signal to his parents.

One of the infant's clearly identifiable reflexes is the Moro reflex. In the reflex, the infant drops his arms to either side, extending his fingers at the same time. Then he quickly brings his arms back up, as if he were hugging a stuffed toy to his chest. Some infants display this common reflex whenever they are moved or surprised; most will display it when their head positions are suddenly changed. The curious thing about the Moro reflex is that it disappears within three to six months after birth. Some psychologists believe they know why the reflex disappears. They think the Moro reflex and all other basic reflexes are controlled by the brain stem, which lies under another section of the brain called the cerebral cortex. The cortex, which houses memory, thought and perception, does not operate until an infant is several months old. However, when the cortex does begin to operate, it assumes control over the brain stem by blocking or modifying the signals emanating from that area. It is one of these signals that sets off the Moro reflex. Thus, when the brain stem is dominated by the cerebral cortex, sometime between the third and sixth month, the Moro reflex ceases. Based on this belief, psychologists have hypothesized that the one-year-old child who still displays the Moro reflex may be suffering from an inoperative cerebral cortex, resulting in damage to his central nervous system.

The Babinski reflex is another prominent infant action. It consists of the spreading of the toes when the sole of the foot is touched. Like the Moro reflex, it disappears when the infant is four to six months old; its persistence well beyond six months can again signal a malfunction in the nervous system.

The infant may display more than 20 reflexes. Only a relative few, however, are important in his development. We can dismiss the eye blinks and coughs. These reflexes do not develop any further. Others, such as sucking, grasping and eye-focusing, while present in the newborn, improve rapidly and are important in his development. As we shall see in the chapter on mental and cognitive development, it was Jean Piaget who described the central important role these developing reflexes play in the infant's early growth.

#2 hed The Infant's Needs

Like any living organism, the human infant's survival depends on the satisfaction of a handful of basic needs. First he needs oxygen and a constant air temperature somewhere above 70 degrees. His requirement for sleep is at first as much as 18 or 20 hours a day but declines until one year of age when the infant sleeps about as long as he stays awake. His first need for nutrition is for liquids. Then, in a few weeks, he eats semisolid foods. He eliminates urine frequently

Maybe drop this & p.7.

during the first few weeks after birth, with the number of urinations slowly declining and the volume of urine in each gradually increasing. By seven months, he may not wet himself for as long as two or three hours, and by one year he may stay dry for an even longer time.

The infant eliminates solid waste also. This process, like urination, is involuntary in the early infant because the nerves and muscles he needs to control bowel and bladder functions have not yet fully developed. In the first three or four weeks the infant's bowel movements are frequent, but after one month they usually decline to three or four a day; by two months to two a day, one as he wakes in the morning and another during or near a mealtime. By four months the infant's system has established a set pattern between eating and bowel movements. (X) INSERT

Toilet training, which usually is accomplished in the infant's second year, requires the child to control his reflexive bowel and bladder movements. The child must learn--through whatever inducements the parents devise--to replace reflex with control. ~~Toilet training will be discussed~~ in Chapter 7.

The infant's needs for food, drink and elimination are the bases for his first relationships, since to satisfy these three needs, he must depend on others. In Chapter 7, we will discuss these three needs as they affect ~~in terms of~~ the infant's social development.

#2 Norms and "normal" behavior

~~Is Norm normal?~~ As we discuss the infant's physical growth and development, we will use the phrases, "the average infant," "the normal child," and "the median age" to tell the child's age at his first step or his other infant "firsts." These expressions are exactly what they say--averages, not absolutes. Many parents, misunderstanding the psychologist's use of the terms norm and average, become alarmed when they read or hear about a certain behavior ~~in regard to an~~ and its established norm. A mother hears that Gesell's norm for standing with support is twelve months of age. Her son is seventeen months old and has not yet pulled himself to his feet against a chair or an end table. Misconstruing what the norm means, the mother worries that her son is not developing properly. In the vastly overwhelming majority of cases, her worry is completely unmerited.

Averages and norms are used because they are convenient summaries. An experimenter tests many infants to find how often "the average infant" turns his head toward a bright light. He finds two extremes--the infant who all but refuses to look at the light and his opposite, the infant who whips his head about as though it were on a swivel. To summarize his findings, the experimenter resorts to an average head-turning frequency, which he devises by adding in all the infants ~~who turned their heads steadily~~. Through a mathematical computation he arrives at "the average infant" for that particular act of head-turning. In fact, however, that average infant, no matter how often cited, remains a mythical child who exists only on the nether side of the experimenter's final "equals" sign. Real-life infants may wildly exceed or ~~miserably fail~~ fall very behind the "average infant's" rating and still be completely normal, growing up into competent adults.

#1 Areas of Physical Growth

#2 Physical Size. The infant's physical growth ~~varies greatly.~~ Babies' birth weights may vary by several pounds--both five and nine pound babies are not that uncommon. The same is true of their size. However, the average newborn male baby--who is a little bigger overall than the female--is about twenty inches long and weighs about seven and one-half pounds. Children will meet, exceed, or fall short of this statistical average, ~~The infant's standing in relation to this norm will depend on its~~ depending on their sex and on the genes ~~its~~ their parents' contribute. The quality of the mother's nutrition and her success at resisting infection during her pregnancy also will help determine the infant's size and weight at birth.

While the infant always seems to be changing rapidly, he grows most quickly in his first year. His length increases by about one-third. If he was born 21 inches long, for example, he would be about 28 inches long at one year. His weight nearly triples--the seven-and-one-half-pound newborn becomes a twenty-pound toddler. In addition to length and weight, other great changes occur. The infant's body proportions and the structure of his skeleton, muscles and nerves are visibly altered during this first year of life.

#2 Proportions. The infant's body proportions change quickly, especially from his sixth to twelfth month. The proportions change because his different parts are growing at different rates. At birth, for instance, the infant's legs are one-fifth adult length and are short in comparison to the size of his head and the length of his arms. However, at about

eight weeks of age, leg growth begins to speed up, and by the end of the rapid development period culminating at about the infant's second birthday, his legs have assumed a body proportion very close to the adult's.

On the other hand, his head and face grow less quickly (during this period) than the rest of his body, even though the size and shape of his skull do change a good deal. The head and face of the three-month-old fetus, for example, is about one-third the length of his whole body. When the infant is born, the head and face unit has diminished to one-fourth of his full length. When he is twelve, it is one-eighth; and when he is twenty-five, his head and face are reduced to one-tenth of his total height.

? p'ps mch. This seems too small. Check.

#2 → Skeletal system. The infant's changing body proportions are determined in large part by the growth of his bones. In the newborn, many parts of the skeleton are not actually bones, but soft cartilage tissue. As minerals, drawn from the infant's food and drink, accumulate in this tissue, it hardens, or ossifies, into bone. Ossification first starts in the womb, and some bones are still hardening when the "child" enters college. Because most of his bones are not extensively ossified, they bend rather than break--the salvation of many a fumble-fingered parent who turns away only to see his offspring roll blithely off the changing table, and crash, usually unhurt, to the floor. Because the infant's bones are light, softer,

and somewhat rubbery, they also respond faster to muscular pull. These assets are balanced by the potential danger that unossified bones, if subjected to severe and extended stress, ~~may~~ can become deformed as they harden.

The baby's bones ossify at different times and different speeds. However, the hardening of some bones is all but guaranteed ~~at~~ by certain ages. By one year of age, for example, three of the 28 hand and wrist bones have already ossified. Other bones, such as those of the skull, take longer to harden. The six soft spots of the infant skull (called fontanelles) do not harden thoroughly until the child is about two years old. Still other bones take years more to ossify completely.

Ossification and skeletal growth, like weight and size, also vary markedly among individuals and groups. Sex is one important factor related to such variation. From birth, a girl's bones grow ~~faster~~ more quickly. Usually, too, the black infant's skeletal development is more advanced than the white infant's. Genes strongly affect the timing and rate of skeletal development. For example, the bones of the broad-framed child ossify faster than those of the narrowly built child. While genes are prime determinants of bone hardening, sickness, malnutrition and allergies also can affect ossification.

Muscles. The newborn infant has all the muscles he ever will have. ~~A~~ revelation that may distress those enthusiastic young fathers of boys who show up in maternity wards waving first baseman's gloves. They need not worry. While the number of muscle fibers will remain the same from birth, the fibers themselves will grow longer, wider

and thicker before they reach maturity, at which point they will weigh forty times as much as they do in the newborn.

Some of the infant's muscles are voluntary, or striped, muscles, such as those in the arms, and some are involuntary, such as those in the stomach. During his first year, the infant does not have full control of his voluntary muscles. His arms, for example, flail in the Moro reflex, an act the infant does not will to happen. Also during this period, the voluntary muscles tire easily but recover quickly as the infant first attempts to sit and walk. The total weight of the muscle tissue an infant possesses varies from one baby to the next. As a general rule, however, male infants have more muscle tissue than females, a sexually rooted difference that remains true at all stages of development.

Teeth. While some babies do not get their first teeth until they are a year old, the average infant's teeth have begun months before he is even born. As early as ten weeks after its conception, the fetus has the beginnings of baby teeth. When the fetus is five months old, calcium has begun to accumulate. Nonetheless, the day of the first tooth varies widely among infants. Some, but only a very few, are born with a tooth, or several. At the opposite extreme is the one-year-old who is finally cutting his first tooth. The average age for the first tooth--usually a lower front one--is seven months. ~~Much as the time of its arrival varies,~~ the coming of the first tooth has no relation to many facets of the infant's physical development, such as height, weight, and the amount of muscle. A muscle-bound one-year-old might be toothless as a hen while

a fifteen-pound weakling his age might flash an impressive, if gappy, grin. An infant's genetic make-up partially determines the sequence and arrival times of his teeth. Sex also helps establish when a tooth appears and how fast it grows. Generally, the female infant "teeths" before the male. Race, too, is a teething determinant. Oriental and black infants usually get their teeth earlier than Caucasians.

#2 hed The brain. Controlling the growth of the bones, muscles and teeth is the brain, a mere three-quarter pound mass in the newborn. Small as that may seem--actually, it is ten percent of the infant's weight, not at all small, relatively. ~~It~~ The brain grows quickly, especially near birth. By the child's second birthday, his brain weighs almost two and one-half pounds. When he is six, his brain will have reached nearly its adult size--four pounds for the adult male. It is slightly less for the female since the brain's mass is proportionate to the body's weight. Between birth and six years, the brain grows more rapidly than any other anatomical system. The infant brain develops so fast that by the time the child is two, it is hard to distinguish--using brain tissue characteristics as the criterion--the ~~child's~~ two-year-old's brain from an adult's.

#2 GROWTH VARIABLES

#3 Sex. The infant's growth rates and the times at which the growth phases begin vary widely among individuals. Whether an infant is a male or female is the most obvious--and a very pervasive--determinant of his growth pattern. Generally, ~~the~~ girls grow faster than boys and their growth is less variable. A study of British children found that from birth, males are usually taller

See WLK p 148

and heavier. Up to seven months, infant males also grow faster. Thereafter, however, the females' growth rate exceeds the male's. This continues until age four (Tanner, Whitehouse, Takaishi 1965).

Besides growing faster, female infants have somewhat more subcutaneous fat than males. This fat, which lies just under the skin, builds up in the fetus until birth, when it begins to disappear. Females have more of this "baby fat" at birth than males, and they lose it a little more slowly. (Stolz & Stolz 1951) The female's skeleton also matures before the male's (Tanner, Whitehouse and Healy 1962)

Food and growth: Nutrition has a definite effect on growth rates. Undernourished infants, such as those born to poor families, or during a famine or war, are noticeably smaller and slower growing (Dean 1951). Similarly, by their third years, and often earlier, children of the upper social classes--who generally eat more nourishing food--are taller and heavier than their lower-class counterparts. The damage caused by early malnutrition can be permanent. A study of African children afflicted with kwashiorkor, a nutritional disease common among infants and older children, indicates that while the afflicted infants gained weight and grew taller upon exposure to a sounder diet, they never did grow as tall or weigh as much as children well fed from birth (Dean 1960). In 1962, after further study, Dean put forward the additional suggestion that even though these undernourished children take adequate nourishment, their development may fall behind the average after four years of age (Dean 1962).

p. 17 taken has been transferred & renumbered.

1 VISUAL PERCEPTION

Improve lead in sentence

The senses play a huge role in the child's development on every level. When examining the senses, we tend to isolate them for purposes of study. Not only do we separate sight from hearing, we also consider the eye apart from the shapes, colors, textures and degrees of light it encounters as it develops. While our discussion requires us to treat each sense, and each sense and its stimuli, separately, it is important at the same time to remember that, far from being separate units, the senses, and each sense and its stimuli, interact very closely. The stimulus has a great effect on the sense. An eye shut off from light and objects does not develop. Thus, when investigating the senses and their stimuli as distinct units, we should keep in mind that ~~the sense and the stimulus are in real life~~ they are in fact closely bound together.

Vision is the sense most widely investigated by researchers. They have examined ~~it~~ vision in its several phases of development. Even at birth, they have found, the infant's eyes can quite sharply detect light, dark, and color. However,

the infant's nerves and muscles used in seeing are not working smoothly together, even though the basic nerves began developing just three weeks after his conception.

The pupillary reflex is the most basic response of the eyes. Even premature babies display this reflex: a "closing" of the pupil when light is brightened and dilation, or opening, when it is dimmed. The same principle a photographer uses as he adjusts his camera shutter to "shoot" in different lights. During the infant's first day or two, only a bright light or a dark room will make the infant's pupils work, and even then they may be slow. However, in a few weeks changes from moderate light to darkness, and vice versa, will cause the pupillary reflex.(Pratt 1934, 1954).

Infants of only two or three days will follow a flashlight's beam. This visual pursuit means that the muscles of the eyes are developed to the point where the infant can direct both his eyes at one moving light and track that stimulus--providing the light is strong enough. While this behavior shows that coordination--the muscular direction of both eyes at one object--is present a few days after birth, it does not show how or if the infant's vision itself has trained on the object.

Convergence is the fit focusing of both eyes to produce one image, as opposed to the simple muscular coordination of the eyeballs. Both coordination and convergence are indispensable to focusing the eyes and perceiving depth. Though the infant does not add the power of convergence to coordination until he is about two months old, primitive kinds of coordination and convergence begin operating within a few hours of birth (Ling 1942). However, the infant does not reach the adult level of convergence, called binocular vision--that is, two-eyed vision--until the two-month mark.

While the newborn baby may "stare" intently at a red rubber elephant, he may be seeing something that looks more like a hippopotamus or an outsized tomcat. The infant's image is unclear. This blurring occurs because his ciliary muscles, which control the lenses of the eyes, have not developed enough to produce the proper accommodation--the adjustment of the lenses' thickness to focus the light rays correctly on his retina. By the time the infant is three to four months old, he will be able to see the elephant's every wrinkle. At this latter time, he will also be shifting his focus well, seeing the clock on the wall as clearly as his mother's face when she feeds him (Haynes 1965).

Like a bright light, the color or black-white contrast that a contour produces catches and holds the infant's eye. Shown a black triangle, he will fasten his gaze on the "corners" of the triangle where the black cuts into the white background to create the strongest contrast (Salapatek 1966). Since an infant usually gazes longer at objects with more contours, experimenters have used the length of his gaze to measure the sharpness of eyes. Robert Fantz did this with infants only a few weeks old. Nine inches from the infants' eyes, he held a gray patch and one made of one-eighth-inch stripes, which, of course, gave the patch many contours. The infants spent considerably more time looking at the striped patch, indicating that their eyes were developed enough to detect--and continue examining--stripes of that thickness at a viewing distance of nine inches. Later, when the infants were twelve weeks old, Fantz held up another gray patch

and a striped patch, this time with more pin stripes--one sixty-fourth of an inch wide. Still--and at a distance of fifteen inches--the infants looked longer at the stripes, showing they could distinguish even such a finely striped patch. (Fantz 1965).

These descriptions present a brief developmental picture of the infant's eyes in the first four months. During the first four weeks, the infant does not adjust the thickness of his lenses to view things different distances from him. Instead, he locks his focus on objects roughly eight inches away. At eight weeks he begins accommodating his eyes to far and near sights, and at sixteen weeks, he can accommodate as well as an adult. While the newborn does not accommodate at all, his eyes do react in other ways. Specifically, his eyes track a moving light and respond to lights of varying brightness.

#2 Attentional Preferences of the Infant

The infant's world is not the adult's well-ordered and familiar one. The difference between the two is rooted in the limited perceptions of the infant. Many stimuli surround the infant, but he sees only some of them. His daytime environment might be, for instance, a kitchen. As described by an adult, it might be a pale blue room with a brown table and four brown chairs, sink, refrigerator and stove. That may not be what the child perceives. The infant's limited color perception, for example, may reduce the kitchen's sensory content, watering all the colors down to a neutral gray perhaps. Equally important, the infant knows no relationships among things. He has none of the adult's

(-5) Does this description have a basis in fact?

Better guess?

All the colors boun to something more diffuse without the distinctness which each of these objects has for adults. (and its color)

knowledge of how the chairs relate to the table, the sink to the wall, the refrigerator to the stove. While he may detect ~~an~~ objects, he is not as "at home," as his parents, or even his four-year-old brother. When an experimenter tries to assess an infant's reaction to a smiling face, a whistled tune, or a red ball, he must first ask himself: Is the infant perceiving the same thing I am presenting?

→ to p23

During his first eight to twelve weeks, the infant is strongly attracted to objects with movement, contour lines, and sharp contrasts, such as the contrast of black and white. However, after his second or third month, these preferences no longer account for some of his eye actions. → to p.2

For instance, while most infants one to two months old will gaze for a longer time at a striped patch than at a bull's-eye, after the two-month mark, they suddenly reverse this behavior and favor the bull's-eye. ~~Why?~~ One ~~educated guess~~ theory is that the target's circle-within-a-circle may, ~~somehow mechanically~~ as a form itself, fascinate the eye's retina, thereby fixing the infant's gaze for an extended time. There are instances, in other animals, of this kind of rapt attention. The monkey, for example, will lock onto two staring eyes--the equivalent of two bull's-eyes--and soon become frightened. ~~It is possible~~ Another theory holds that certain stimuli--like the staring eyes for the monkey--automatically compel attention because they are inherent ~~visual triggers that set off and sustain nerve and muscle patterns involved in staring. In this view, the bull's-eye holds the infant's eye because the form of the circle-within-a-circle hypnotizes the eye, and the~~ activities only visual triggers that set off and sustain nerve and muscle patterns involved in staring. In this view, the bull's-eye holds the infant's eye because the form of the circle-within-a-circle hypnotizes the eye, and the

Use other example of changing visual preferences, or omit. Too close to Hussen.

longer the eye focuses on the target, the stronger the hypnotic bond becomes. An inherent visual fascination with a form may explain the particular case of the bull's-eye, but to fully understand why the infant prefers to look at certain things, we we need to know more of the principles controlling those preferences.

Complexity theory. One proposed principle governing visual preferences is that infants like a fair amount of complexity in objects. It is true that they gaze longest at a moderately complicated object. One trio of experimenters, Brennan, Ames, and Moore taking up the complexity theory for testing, defined complexity by the number of objects and then by the variety of objects. They used three groups of infants, three weeks, eight weeks, and fourteen weeks old, with ten infants in each group. Taking number as the criterion of complexity, the experimenters presented the infants with more complex patterns (increasing in complexity) in rough proportion to their age and supposed developmental stage. The three-week-old infants received black-and-white checkerboards with four squares; the eight-week-olds with sixty-four squares; and the fourteen-week-olds with 576 squares. Next, taking variety as the criterion of complexity, the three experimenters presented two groups of infants with a circle containing three stars, three squares and three triangles, while the other circle enclosed nine triangles, although both circles still contain nine objects. In both

experiments, the researchers recording the number and time of eye fixations, found that the simplest design appeals to the youngest child, the moderately complex ~~in the case of the oldest babies~~ to the ~~younger~~ older infants, and the most complex to the oldest (Brennan, Ames and Moore 1966). Clearly, these results point to a gradual change in the infant's ~~ability~~ interest in scanning patterns. Conclusive as it may seem at first glance, complexity itself has not been finally proved a determinant of infant interest. So far, no experiment has been able to eliminate the ~~object-quality~~ size and contour of the check-board as opposed to the size and contour of its pattern as possible influences on the maturing infant's tendency to choose more complex objects.

3 Meaning and familiarity. In addition to contour, contrast and movement, ~~and complexity,~~ infants are attracted by the familiarity of objects. Year-old children sometimes will even prefer a familiar object over one with movement and contrast. One study by Haaf and Bell shows that even four-month-old infants respond strongly to sights that have meaning for them or are familiar. The two experimenters in this case showed the children four face drawings. The first was similiar to the human face, the second was missing an eye but had a rash of random contour-contrast lines and dots covering the face, the third had no eyes or mouth, and the fourth, had an oval enclosing a mass of squiggles with the same number of contour-contrast lines as the second face. The infants looked longest

~~with a great deal of contour. The infants looked longest~~ at the first face--which was most human--even though it did not have as many contour-contrasts or squiggles as the second and fourth faces. Of those two, the second face looked more human and the infants looked longer at it than at face four. The third face, lacking the mouth and both eyes, drew the least attention. These findings seem to indicate that the face's familiarity or meaning for the infant does do more to hold his eye (does the face's) than complexity (Haaf & Bell, ~~no date~~ 1967).

~~Two other experimenters~~ Fantz and Nevis found that infants from four weeks to six months of age preferred an oval with spots in place of eyes. Until 5 months, the same infants were as ~~liable~~ likely to choose a photograph of a head as a painted, ~~model~~ model head. At the same time, they found that until infants were fully six months old, most did not consistently prefer an accurate drawing of a basic face over a face with its features strewn about (Fantz & Nevis 1967).

instead of what?

3 Discrepancy of schema. After six months, and sometimes as early as four months, the infant recognizes schemata, which are visual patterns he has abstracted and retained. These hold his eye. Schemata are images and impressions of real objects. However, a schema may also be an abstraction, an idea. During his first twelve

Elaborate that we infer but he has some controlling ~~internal~~ phenomenon because we observe his "recognition" (smiling) of familiar objects. We may call this a schema. It may be an image or idea, but we don't really know.

presumably ... said "internal representations" or ...

months, the infant is simply gathering "images" of things. But after he has seen his mother's face, his nursing bottle, or his stuffed dog often enough, he builds up a schema, ... a picture more like a political cartoon than a photograph. The schema accents certain features of the object much as the cartoonist draws a banana nose, wildly bulging eyes, or elephant ears if the Congressman or President he is depicting has even a hint of such features. The infant's schema of the human face may be an oval shape with two eyes placed at the same level.

Differences between an infant's schema and the object he is viewing "out there" can rivet his attention. The face missing an eye is a fascinating sight, possibly because it retains much of its "faceness" while it lacks one of the face's basic components. The object that differs only moderately from an infant's schema attracts him more strongly (than one that is highly different from his schema). Two researchers McCall and Kagan illustrated the attractive power of such a distorted or discrepant object. They showed one group of four-month-old infants black-and-white shapes, and another group face drawings and two photographs. One drawing and one photograph had scrambled features. While the black-and-white shapes had much more contrast than either the face ... the infants looked longer at the distorted faces. So it is clear that objects moderately different from an infant's schema will often draw and hold his gaze longest. (McCall and Kagan 1967)

#3 Associations. The quality of associations an infant has learned for an object is another determinant of how long he will look at that object. Generally, the infant's associations do not become rich enough to affect his attention span until he is over a year old. At this age, a child presented with a discrepant face behaves differently from the younger infant. Besides having a cluster of face associations, he also knows some words. The sight of a distorted discrepant face, a one-eyed man, for example, may provoke a host of questions in his mind. Where did his eye go? How did he fall down and lose it? Is that why he does not smile? As he tries to explain the facial distortion in terms of the face, he is things he knows about, likely to keep his eyes fixed on the discrepant face.

#3 Part-whole perceptions. Researchers in perception also are interested in the question of whether the infant sees the whole object or only a part of it. One experimenter (Salapatek) showed newborn babies shapes--black and white, outlined and solid geometric shapes--of three sizes. He also showed them a blank, flat surface. The infants scanned the flat, blank surface a good deal, especially horizontally. When the experimenter introduced any of the shapes, the infants cut back quite a bit on the scope of their scanning. On smaller shapes, they scanned a smaller area than on larger shapes. Many infants confined their looking to a very small part of a shape, even when the shape itself was the smallest size shown them. This study and others indicate that newborn babies limit themselves to a small number of elements in any thing they view (Salapatek 1968).

1968

All that we now know about the kinds of objects infants gaze at, when, and for how long--all this knowledge does not give us a clear picture of the infant's visual perception, but it does outline large areas in this rather strange landscape. We know more today than Piaget did when he published his first work almost fifty years ago. Yet we have much more to discover. We know that contour-contrast and movement are the first two qualities that attract an infant's eye. At two or three months, the infant has developed visual schemata of things to the point that he can tell when an object differs noticeably from his schema and will catch and hold his attention. [illegible] his schemata come into play--[illegible] the infant's first birthday--he can digest facts about the world and, with language, do something with this information. He begins to hypothesize about oddities he sees. The length of time he spends looking at something is a fair guide to how actively he is trying to explain it to himself. The infant has begun to think about what he sees.

2 Depth Perception

Vital as the perception of depth is in our three-dimensional world, the infant is born without it and does not develop it until he is between eight and twelve weeks old. At that age, the infant confronted with a flat cardboard-mounted likeness of a human head and then with a three-dimensional model of a head will look more at the three-dimensional model (Fantz 1965). Infants younger than ten weeks will look for the same length of time

at a two-dimensional black circle as they will at a black ball. However, after ten weeks, as the infant notices depth, he begins looking longer at the black sphere. Most infants under ten weeks will select the same ~~thing with~~ a photograph of a person and the person's face, first looking equally at both picture and person, and then, after ten to twelve weeks of age, smiling more and making more sounds to the real three-dimensional face than to the flat print. ~~Thus, the infant seems to begin to perceive depth~~

#3 The visual cliff. As an experimental device (the "visual cliff") dramatically displays the infant's depth perception in his first year. Experimenters place an infant on a crawlway that is flanked by two heavy glass plates. One plate covers a checkerboard pattern. ~~On the other side, the~~ patterned extension is several feet below the glass, creating the ~~visual cliff.~~

Infants six months old quickly recognize what they see as a sheer drop and will not move off the crawlway on that side, even though they can feel the heavy glass bridging the gap. They even refuse to venture out when their mothers stand across the gap, calling and gesturing to them (Gibson and Walk 1960). Puzzled perhaps, they nonetheless trust their eyes and cling to the crawlway.

by this apparently unreasonable request

When the experimentors replace the checkered floor of the gap with a gray pattern--which makes it harder for the infants to detect depth--many of the infants lose their fear and cross over to their mothers on the glass. They do the same thing when the experimenters make the cliff much less threatening by raising the checkered floor up to within inches of the glass (Walk 1966). These experiments are clear evidence that

the infant does perceive depth as early as ten weeks of age, and will, at six months, trust his depth-perception judgments and act in accord with them against considerable inducements to the contrary. go against them.

Since perception of depth does not appear for at least two months after birth, some psychologists maintain that depth perception is learned. According to this theory, the infant slowly becomes accustomed to depth by seeing objects at a distance. This hypothesis gains some support from the work of a researcher named Walk who found that babies who begin to crawl late in their infancy--and thus presumably have little experience with objects around them--are more willing to crawl off the visual cliff than early walkers who are experienced with objects and know a bad spill when they see one (Walk 1966). While this seems to confirm that infants learn depth perception, other evidence indicates that an infant is equipped to perceive depth at birth. For instance, experimenters working with chickens and goats found that these animals did perceive depth at birth and would not step off the visual cliff. Since the infant locks his focus at eight inches and does not adjust his eyes for other distances until he is twelve to sixteen weeks old, he may have depth perception at birth, but seldom, in practice, see any depth of field until he develops his eyes' muscular coordination, just as he eventually develops his leg muscles enough to walk.

In the human infant we find a visually accomplished being who sees images sharply, has put together schema for

objects when he is barely over 60 days old, and finally, perceives depth. While he has not acquired anywhere near an adult's wealth of object associations, ~~making his observations less understandable to him~~ the infant at his first birthday may well be seeing the world in ~~much~~ basically the same way as his parents.

OTHER SENSORY-PERCEPTUAL DEVELOPMENT

~~The~~ Auditory perception

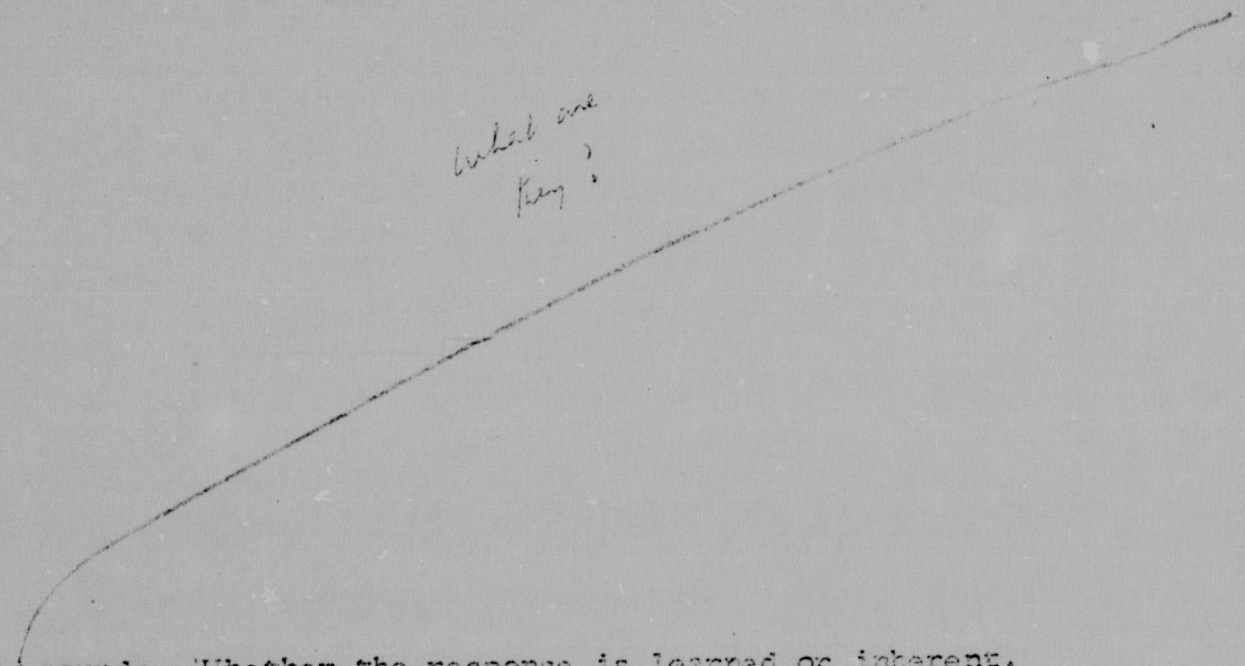
Pitch, duration, rhythm. We know much less about what the infant hears than what he sees. And since the bulk of the existing research, which is not extensive, has focused on the newborn baby, we know little about the huge span from two weeks to twelve months of age. We do know that the newborn baby can hear and that he notices a sound's frequency and the direction it comes from. When an infant first hears a sound he will stop what he is doing. Then he may kick his legs, breathe hard, or ~~contract and expand~~ flex his abdomen. After many repetitions of the sound, he will accept it and stop reacting. A new tone, however, will again draw a response. A study by Leventhal and Lipsitt ~~two experimenters~~ shows how two and three day old babies demonstrate this (cycle of behavior). The experimenters first adapted the infants to hearing a tone with a frequency of 200 cycles per second--about the pitch but not the loudness of a foghorn. When they increased the frequency to 1000 cycles per second--the pitch of a clarinet--the infants responded immediately. They also responded when the "foghorn" was sounded in their right ears, not because it was a new sound, but because it came from a new direction (Leventhal & Lipsitt, 1964).

Keene and Graham, two other experimenters, tested infants under three days old to see if they could distinguish between brief and longer sounds. The experimenters sounded two tones of the same pitch, one lasting two seconds and the other ten seconds. To measure the effect of each tone, they monitored the rate of the infants' heartbeat. They found that the ten-second tone prompted a much greater increase in the heart rate than the two-second tone--until repeated soundings made the infants indifferent to both. However, the initial increase in heart rate for the ten-second tone shows clearly that even infants two days old can tell the difference between long and short sounds (Keene and Graham 1965).

Newborn infants also recognize and are affected by rhythm and pitch. Arythmic sound--such as a heart beat--will soothe an uneasy infant much better than an irregular sound, such as a radiator banging or a dog barking. When the heat beat, a low-frequency sound, is compared to a rhythmic click, which usually has a higher frequency, the heart beat remains the better pacifier, indicating that the infant responds to pitch. Some researchers have said that the heart beat soothes an infant because it "reminds" him of his mother's heart beat as he heard it in the womb. This is not as implausible as some critics have maintained. On the contrary, experiments have shown that newly hatched chicks that hear a beeping sound of 200 cycles per second for some time before hatching will pick out that sound when presented with both it and a 2,000-cycle tone. In addition, chicks that were exposed to a 200-cycle before hatching trailed after a toy chick beeping at 200 cycles for a longer time than they followed a toy chick making a noise they had never been exposed to (Grier, Counter and Shearer 1967).

While these studies give evidence that the human infant does learn

its response to the heart beat, other studies do not corroborate the finding that infants are quieted by a heart beat or any other rhymic, low-frequenc



sounds. Whether the response is learned or inherent, the earlier experiment and centuries of human experience t^ell us that infants are effectively soothed by such slow, rhythmic chants as "Sleep now, sleep now, sleep now."

3 Familiarity

#4 I've heard that sound before.

While the newborn recognizes a sound's frequency, length, rhythm and point of origin, the infant of six months or a full year also recognizes the familiar sound. Experimenters in one study read four sentences with different inflections and meanings to eight-month-old boys. Two sentences read with high and low inflections were deliberately nonsensical. The other two, which made sense and used familiar words such as daddy, baby and smile were also read with high and low inflections. Each infant heard each sentence three times in no particular order. Of all four, the one combining a high inflection with familiar words evoked the most babbling, even though

male

As early as eight the infant's auditory echoes of familiar sounds temporarily affects his responses to other sounds resembling these. Interestingly, the infant's "understanding" of certain spoken words comes well before he himself can pronounce any words at all.

#2 Changes in position. As anyone who has ever held a baby knows, infants are very sensitive to how they lie, sit or are carried. If held awkwardly or insecurely, they will struggle to adjust to a comfortable position. A baby laid on his stomach or rolled about -- as in a fast diaper change--may move his head or roll his eyes from side to side. Even at birth, infants held up with their feet on a table will take steps. These reflexes, the precursors of acts used in balancing and walking, show that even the youngest infant responds when the "balance" organs in his muscles and ear canals send out signals calling for certain changes in his position.

#2 Taste Perception. At birth infants have no taste sense. They cannot distinguish between such different liquids as sugar water and fruit juice. However, the sense develops quickly. Within two weeks, the infant begins to pucker his lips and suck if a sweet food like sugar is put in his mouth; a bitter liquid like quinine or fruit juice, made sharp by its citric acid, evokes a shake of the head and a fierce grimace (Pratt, Nelson & Sun 1930). In another indicative experiment, the researcher found that newborn babies will [illegible] the taste of milk, acidic milk, glucose, and sterile water, but they will slow down or stop

sucking if they taste a salt solution. It also noted, as you would expect, that the baby who is fairly well fed distinguishes more carefully between foods than the ravenous infant (Jensen 1932).

#2 Perception of smell

While not much data has been gathered about the nose's power to scent odors--olfactory perception--some information is available. It is known, first of all, that newborn infants do have a sense of smell. Though faint odors draw no response from the newborn, except perhaps to make him more active generally in his crib (Disher 1934), a sharp or offensive odor, such as ammonia or acetic acid, will cause him to promptly turn his head away. He also distinguishes among smells. An experimenter, who presented infants ten times with a combination of two odors, found that at each scenting of the two mixed odors, the infants' breathing change--the guide to their responses--diminished a little as they grew used to the combined smell. Yet, when the experimenter gave the infants only one of the two odors--a distinct change from the mixture--most of them drastically changed their breathing, showing they had smelled the difference between the mixed and single odors (Engen & Lipsitt 1965).

#2 Heat and pain. While infants differ quite widely in their sensitivity to heat and cold, they all respond to these stimuli. They feel temperature changes both externally, as when a warm or cold object touches their legs (Crudden 1937; Pratt, Nelson & Sun 1930), or internally, as when prepared formula is either too warm or too cold (Jensen 1932). Generally, the infant moves about more when he is cold than when warm.

Little conclusive data has been assembled on infant pain perception. However, it appears that the newborn is able to feel some pain, a sensitivity that develops rapidly within four or five days. While a newborn infant might absorb as many as six pin pricks in the sole of his foot before pulling back his leg, an infant only eight days old will often jerk back his leg after the first touch of the pin (Sherman and Sherman 1925; Sherman and Sherman 1936). The sex of an infant also seems to influence his sensitivity to pain, with females reacting more quickly and sharply to pain than males. Lipsitt and Levy tested newborn infants by applying a slight electrical shock to a toe. They found that the female wriggles the shocked toe with a vigor that only a stronger shock could draw from an infant boy the same age (lipsitt and Levy 1959). Pain at any age, of course, instills fear, which affects the infant's learning ability as we saw in Chapter Four, as well as his social and mental development as we shall see in the next two chapters.

1 MOTOR DEVELOPMENT

The young child's neuro-muscular development is depicted quite clearly in the stages of his motor development in infancy. His progress from sitting up, to crawling on his hands and knees, to standing to walking, is an outward reflection of the growth and coordination that is occuring in his nerves and muscles. The infant usually is able to perform these physical acts before his second birthday. By then, he has developed his behavior through his increased mobility. At the same time, his central nervous system has grown more complex and his muscles and bones have become larger and stronger. In this section, we will look closely at the development of these motor activities as well as at the infant's growth in reaching for, and grasping objects.

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Babbling, Vocabulary, and I.Q. Scores

Babbling in the first 4 months is not considered a reliable indicator of the size of an infant's later vocabulary or his volubility. However, between 4 and 12 months, babbling does seem to predict attentiveness and intelligence as measured by I.Q. tests – but only for girls.

A study by McCall and Kagan provided evidence of the relationship between babbling and attentiveness. They presented pictures of faces to 4-month-old boys and girls; the infants' responses differed widely. Some did not babble at all, and some babbled nonstop for several seconds at each face. At 8 months of age, the girls who had vocalized intensively to the pictured faces paid closer attention to a taped voice than the girls who had not babbled. At 13 months, the girls who earlier had babbled the most now continued to vocalize more in response to human likenesses; they also displayed greater attentiveness by settling down more readily than did the girls who were nonbabblers at 4 months of age. Again, at 27 months, the babblers among the girls played longer and remained interested by individual toys for longer spans than did the more silent girls. Throughout the experiment, babbling and nonbabbling boys also were compared in the same way. However, they did not demonstrate the relationship between babbling and attentiveness that the girls had displayed (McCall and Kagan 1967).

The connection between babbling and later vocabulary and I.Q. scores is supported by two other studies. Cameron, Livson, and Bayley found in 1967 that females who babbled often, when tested between 6 and 12 months, earned higher I.Q. scores as adults than girls who had not babbled. Again, boys' babbling predicted nothing – the frequency of their early babbling did not correlate with the distribution of higher I.Q. scores among them. An experiment that Moore conducted in London in 1967 provided similar results with a different criterion – vocabulary. Moore found that 6-month-old girls who babbled intensively displayed larger vocabularies when they were 2 and 3 years old than girls who had not babbled. Among the boys, however, many babblers and nonbabblers alike later developed vocabularies of the same size. Babbling, it appears, is related to syntax and verbal fluency, but only in girls does it forecast vocabulary size or scores on I.Q. tests, which primarily measure verbal ability.

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Relation of Babbling to Later Mental Development

Although frequency and variety of babbling during the opening months are not good predictors of the child's later talkativeness or the size of his vocabulary, they are the ingredients from which basic speech sounds will be formed. There appears to be an interesting sex difference in the predictive power of early babbling between 4 and 12 months of age. Infant girls who babble in response to human faces tend to be more attentive and obtain slightly higher intelligence scores at 1, 2, and 3 years of age than girls who babble very little to human faces. This relation does not hold for boys, despite the fact that the 4-month-old boys babble as much as girls. Boys and girls 4 months of age were shown the faces illustrated in the Fig. 5.11. Some children never babbled to the faces; others babbled several seconds to each face. When these infants were seen at 8 months of age, the girls who babbled a lot at 4 months showed more attention to the sound source of a tape-recorded voice than the girls who babbled little. These same infants were seen again at 13 months of age. The girls who had babbled earlier, vocalized and quieted more readily to representations of human forms than the girls who had not babbled at all. At 27 months, the former group played longer and showed more sustained play with toys than the nonbabbling girls. This relation did not obtain for boys.

Two additional, independent longitudinal studies have reported similar and equally interesting results. Infant girls who vocalized frequently in a testing situation between 6 and 12 months of age had higher IQ scores as adults than the infant girls who did not vocalize. However, this relation between early vocalization and IQ did not occur for boys (15).

A similar study of infants in London yielded comparable results. Girls who vocalized a lot at 6 months had better vocabularies at 2 and 3 years of age than the girls who did not vocalize. However, the boys who vocalized a lot had no better vocabulary than those who did not babble at all (77).

15. Cameron, Livson, and Bayley 1967

77. Moore, 1967

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SEX DIFFERENCES. Although it is known that girls respond more to auditory stimulation, that they babble more, and that increased babbling in girls predicts larger vocabularies and higher I.Q. scores, it is not clear why girls are so different from boys in these respects. Acheson maintained

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that female infants have a more regularly paced cognitive development than male infants. If it is assumed that frequent babbling indicates accelerated mental development for both the male and the female infant, the much steadier pace of the female's mental development would make her babbling a better indicator of her future I.Q. It may be that, like the female's more stable rates of physical growth, the greater predictability of I.Q. through her babbling simply demonstrates once again the female's generally more regular overall development (Acheson 1966).

A second theory of how sex affects the babbling-I.Q. relationship portrays males and females as having distinctly different modes of reaction, determined by different neuromuscular integration. The structure of the female's nervous system might be such that it leads infant girls to babble when excited. Thus, the female's babbling would be a reliable barometer of her awareness—possibly even of her adult intelligence to come. In contrast, the male infant's central nervous system may be organized so that visual, auditory, or tactile stimulation does *not* make him babble. In his case, the rate or extent of his babbling obviously would not be a reliable guide to his intellectual development. A study by Moss supports a third theory, which stresses the mother's treatment of her infant. Basic to this view is evidence that mothers treat their infant sons and daughters in different ways. Moss and his associates observed 26 mothers and their newborn sons and daughters in their own homes over a period of time, recording specific activities of the infants and the mothers' reactions to their sons and daughters. Moss found that the mothers of girls spent more time mimicking their infants' vocalizing (in effect, rewarding it) than did the mothers of boys, although at the time of the first observations—3 weeks of age—boys and girls were spending about the same amount of time vocalizing. By 3 months of age, however, girls were vocalizing much more than boys (Moss 1967).

A mother's frequent "conversations" with her daughter could explain the infant's more frequent babbling. In the same way, a mother's interest in her daughter's developing speech also could lead her to teach her daughter to pronounce words at an early age. Conceivably, the daughter's growth from vocal infant to verbally advanced young girl could be prompted by her mother's continued efforts. The predictive connection between a girl's babbling and her later verbal powers may depend on the mother's steady acceleration of her daughter. Moss attributed the lack of any predictive connection between a boy's early babbling and his speech development to the fact that mothers vocalize less with their boy infants than with their girls. He found that whereas the well-educated mothers he observed talked to their daughters much more than mothers with less schooling, all the mothers of sons talked to their boys approximately the same amount of time, which was less than the other mothers talked to their girls (Moss 1967).

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How can we interpret this interesting sex difference found in *three separate longitudinal studies*? There are several possibilities. One explanation assumes that the innate neuromotor organization of boys and girls is basically different. If the central nervous system of girls were structured so that girls were more likely than boys to vocalize when they are attentive to and excited by an interesting event, then the vocalizations of the infant girl would be a good measure of the girl's tendency to invest attention in events around her, and perhaps predictive of her future intelligence. If the innate neuromotor organization of boys did not lead them to vocalize when they were attentive to events, then vocalization in the boy should not be related to future intellectual ability.

A second possible explanation also has a biological flavor and assumes that there is greater stability of cognitive development among girls than among boys. In this case, it is assumed that frequent vocalization reflects advanced mental development for both boys and girls. But because a girl's rate of mental development seems to be more stable than that of the boy, the infant vocalization score is a better predictor of future IQ among the girls than boys. It is perhaps not a coincidence that physical growth dimensions—such as height, weight, and rate of bone growth—are more stable from year to year among girls than among boys (7). It is possible that the greater predictive power of infant vocalization for girls is another reflection of a more general tendency toward greater stability in girls' development.

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A final potential explanation assumes that mothers treat sons and daughters differently, and argues that mothers who are motivated to encourage their daughter's mental development spend a lot of time vocalizing to them—more time than they would with a son, and more than mothers who are not concerned with their daughter's rate of development. The mother's face-to-face vocalization should lead to increased levels of babbling in the girl. This mother would also be expected to continue to stimulate her daughter and would probably teach her words early and encourage the development of other intellectual skills. The predictive link between early babbling and later cognitive abilities would then be a function of the continuity of the mother's acceleration of her daughter. The absence of a predictive link between infant vocalization and cognitive development in the boys would require the assumption that accelerating mothers do not preferentially engage in as much vocalization with their sons. Preliminary data support this assumption. Observations of the mother-infant interaction in the home reveal that well-educated mothers engage in more distinctive face-to-face vocalization with their daughters than less-well-educated mothers do, whereas there is no comparable difference among the mothers of sons. Moreover, middle-class mothers are more likely to imitate the vocalization of their 3-month-old daughters than those of their sons (78).

It is not possible at the moment to state which of these explanations is the best. Future research will help to make that decision.

1. Acheson, 1966
78. Moss, 1967

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Nature of Early Language Sounds

STARTING WITH PHONEMES. As early as the first 10 days of his life, the infant is able to sound four of the 35 basic phonemes that make up the American English language. *Phonemes* are the fundamental sounds of a language, and in English they include vowel and consonant sounds such as *o* and *t*. The newborn can be heard making the vowel sounds that are stressed in this sentence: "My pet, a fat mutt, bit me." Of these four sounds, the *a*, as in *fat*, is the most common during the first 10 days. The most frequently heard consonant, after 10 days, is the *h* as in *horse*, but *k* and *w* also are heard occasionally.

The first elementary sounds an infant utters seem to bear no relation to the sounds he hears about him. American, German, Italian, and Swahili babies all pronounce the same phonemes as they progress through the stages of babbling. For a while they all utter the German's vowels, the Frenchman's guttural *r*, and many other sounds they later will drop from their repertoires because their native languages do not use them. As adults they will be unable to reproduce some of these "foreign" sounds without training and practice.

Vowels outnumber consonants by about five to one in the infant's "speech" for the first four weeks. After that time, the use of vowels declines, and consonants begin to predominate. By the age of 6 months most babies are capable of making nearly all the vowel sounds (McCarthy 1954), but the production of consonants increases even more

149 rapidly. Soon after his first birthday, the infant is uttering more consonants than vowels as he approaches the adult ratio of 1.4 consonants for each vowel (Irwin 1948). Of the infant's early consonants, 9 out of 10 are glottal noises or the *h* sound—all made in the throat. However, by 12 months, he has reduced these primitive sounds so that they are only about one-third of his store of consonants (Irwin 1947).

As he grows older, the infant also makes more and more sounds in any given period of time. At 8 weeks, he averages 63 sounds of all kinds in a 30-second breath-test time. At 24 weeks, his average rises to 74 sounds, and by 12 months he is up to 90 sounds (Irwin and Chen 1946; Irwin 1947, 1952).

Speech Development

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In the first year of life, the major language developments include the emergence of about one-half of the major phonemes and some simple morphemes. Phonemes are the fundamental elements of a language and include the basic vowels and consonants. The sounds of *p* and *b* are examples of phonemes. Many phonemes occur spontaneously in the child's babbling, but a certain amount of learning is involved in refining the production of the naturally occurring phonemes so that they sound more like the articulations made by adults. The morpheme is the smallest meaningful element in a language. The morphemes *ma* or *no* have distinct and relatively unambiguous meaning.

The most systematic research on speech development in early infancy has been conducted by Irwin and his associates at the University of Iowa (*18, 19, 53–62*). They recorded phonetically the speech sounds made by 40 infants during the first 10 days of life. The vowel sounds uttered were *i* (as in bit), *e* (as in bet), *a* (as in bat), or *u* (as in but), *a* being the one all infants made. The aspirate *h* (as in house) was the most frequently used consonant, and *w* and *k* were also noted occasionally. The consonants *m*, *l*, and *b* were not heard during this period.

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Throughout infancy, there are marked changes in the nature and number of sounds produced. In a 30-month longitudinal (follow-up) study of speech development, Irwin (*53–60*) phonetically transcribed monthly samples of the speech sounds uttered by 95 infants during a short test period (30 breaths). Speech development was measured in terms of phoneme types (elemental speech sounds listed in the International Phonetic Alphabet) and phoneme frequency (the number of times each of the types is used by the infant).

The data revealed rapid and far-reaching expansion in the infant's speech repertoire during the first year. As early as "the second quarter of the first year of life infants produce most of the vowel elements and about half of the consonants" (*73*, 507). The average baby under 2 months of age has 7 phonemes in its speech repertory; at 6 months he has 12, and at a year, 18. (Adult American speech includes 35 phonemes.) The number of sounds uttered also multiplies rapidly during this period. During the first 2 months, infants vocalized an average of 63 sounds (counting all repetitions) in the test period, but at 6 months, the average number rose to 74, and at a year it was about 90 (*53, 59, 60*).

Throughout the first year, the number of vowel types used exceeds the number of consonant types. The vowel-consonant ratio is 5:1 during the first month, but this discrepancy becomes reduced gradually until after the first year, consonants predominate. Adults have a consonant-vowel ratio of 1.4:1 (*56*).

About 90 percent of the earliest consonant sounds made by the infant are glottals (aspirate *h* or stops and catches made in the throat), but by the end of the first year, these sounds constitute only about 30 percent of the infant's consonants. Labials (for example, *p, b, m, w, wh*), labiodentals (*f* and *v*), and postdentals (*t, d, n*) are practically nonexistent in the neonate's repertory, but they become quite frequent during the first year (*54, 55*).

The regularity of trends in sound production provides some evidence that early sound patterns are dependent primarily on maturation and changes in anatomical, neuromuscular systems. For example, the postural change involved in sitting "must affect the shape of the oral cavity, especially by affecting the normal position of the soft palate, which undoubtedly accounts at least in part for the forward movement of the control of muscles involving the later-appearing consonants" (*73*, 513).

Moreover, children of all nationalities seem to go through the same sequence of speech development. "Children who are hearing only English use German [vowel] sounds, French guttural *r*, and a wide variety of sounds they will not be able to produce as English-speaking adults" (*76*, 146).

53. Irwin 1947
55. Irwin 1947
56. Irwin 1948
59. Irwin 1952
60. Irwin and Chen 1946

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INFANT TEST SCORES: POOR PREDICTORS. Although infant intelligence tests are able to rank a baby in relation to his peers, they fall a good deal short of their target, which is to predict the intelligence of the infant several years from the test date. The reason for this failure is simple. While the infant tests primarily measure sensorimotor skills—the most efficient skills the infant then possesses—later tests move beyond these skills. Intelligence tests of 6- and 7-year-old children require the child to reason, remember, and use language and abstractions.

Bayley undertook a study spanning about six years to confirm the lack of predictive power for infant tests. First, she gave a group of infants tests made up of 185 tasks during their first few years. Then, at ages 6 and 7, she gave them the Stanford-Binet test, another well-known measurement of intelligence. Bayley found very few substantial correlations between the children's scores as infants and their scores as kindergarten and first-grade pupils. She concluded that test scores made by infants under 18 months are of no help whatsoever in predicting school-age abilities (Bayley 1943). Other experiments have shown that even scores earned at 21 months are not reliable in predicting the child's performance on the Stanford-Binet test four or five years later (Honzik 1938). In order to obtain a score correlation of any depth, in fact, intelligence tests should be given at age 2 or later.

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It has been suggested, however, that an infant's attentiveness is related to his later intelligence. As Lewis (1971) has noted, "Attention is most necessary for any subsequent intellectual functioning, and individual differences in it will be predictive of differences in other learning phenomena." Measurements of attentiveness at 1 year, which tested specifically the infant's ability to distribute his attention and to switch his attention from familiar to new stimuli, were closely related to later I.Q. scores of the same infants at 4 years of age.

Whether or not infant tests of sensorimotor skills and attentiveness can predict an infant's future intelligence level, the tests may prove useful as detectors of the slow or retarded intelligence. Combined with a thorough observation of the infant's behavior and a comprehensive history of his development, the test scores can present quite an accurate picture of the infant's mental level at a specific stage in his growth. Experience has already shown that the tests can reveal mental abnormalities in infants very early—well before these defects would become apparent to an examining physician or a neurologist.

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Mental testers are, of course, interested in predicting the future mental status of the children they test. Does performance on these infant tests relate to later-tested intelligence? Unfortunately for most infants, the answer is *no*. The lack of relationship is due, in large part, to the vastly different kinds of abilities sampled at earlier and later ages. While the infant tests consist largely of sensorimotor tasks, tests for preschool and school-age children are heavily weighted with items dealing with language, abstract thinking, reasoning, and memory.

In Bayley's longitudinal studies, children were examined at frequent intervals beginning in early infancy. During the first few years, an earlier version of her infant tests (a 185-item scale) was used, and at 6 and 7 the subjects were given the Stanford-Binet. Correlations between scores on the infant tests and on later tests were insignificant. The writer therefore concluded that "scores made before 18 months are completely useless in the prediction of school age abilities" (2, 100).

Moreover, test performance at 21 months gives a negligible prediction of success on the Stanford-Binet at 6 or 7 years (34). These findings emphasize the difficulty of making an accurate prognosis of the future ability of a child on a mental test administered before the age of 2.

Nevertheless, the tests may have some predictive or diagnostic value in differentiating between normal and retarded functioning. This is particularly true when the tests are supplemented by careful clinical observations and case history data. On the basis of extensive experience, one clinical researcher concluded that these tests "can succeed in detecting the mentally deviant at a very early age, often before pathology becomes manifest through pediatric or neurological examinations" (21, 120).

2. Bayley 1943
34. Honzik 1938

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Piaget: Intelligence in Infancy

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Piaget has written that "intelligence is a particular instance of biological adaptation" (Piaget 1952). He also calls intelligence "the form of equilibrium toward which all the [cognitive] structures . . . tend" (Piaget 1950). These two statements present the briefest gloss of much of Piaget's basic attitude toward intelligence. The definitions suggest, first, that intelligence is the ability to adapt to an environment, and second, that the ability to adapt passes through a series of maturational stages as it develops. While all infants pass through the same stages, not all pass

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through these stages at the same times. Some are slow in relation to the norms, others, fast. Piaget, however, is not interested in mapping the variations in rates of intellectual growth; instead, he is concerned with the sequences through which all must travel. Incidentally, while there is clearly a wide range in an infant's ability to adapt, studies have shown that early development predicts little in terms of linguistic or numerical ability.

A central belief underlying Piaget's theory of intelligence is that the infant's actions are essential to his development. It is solely through his own physical actions, Piaget contends, that the infant discovers and constructs his knowledge of reality.

Piaget believes that intelligence is the ability to adapt to the environment. The development of the ability to adapt passes through a series of maturational stages. Initially, Piaget distinguished between two major stages in intellectual development: sensorimotor intelligence (approximately 0 to 2 years of age) and conceptual intelligence (age 2 to maturity). During the sensorimotor stage the child's adaptations do not involve extensive use of symbols or language. The ability of the 10-month-old to find a toy under a pillow or to shake a rattle in order to make a noise does not require knowledge of a language. These acts are considered preverbal.

The sensorimotor phase is further differentiated into six developmental stages covering the first 18 months of life (*80*).

The first four stages of the sensorimotor period are generally achieved during the first year, although for Piaget the ages at which the stages occur are not of primary importance. All children go through the same succession of stages, progressing from earlier to later in the same order, but the rate of progress will vary from child to child.

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Responses that Affect Parent–Infant Interaction

SMILING. **An infant's tendency to smile, even though it may not be recognized as an individual characteristic at first, can affect his relationship with his mother. If he smiles frequently, for whatever reason, he conveys contentment to his mother. This makes her feel successful in her maternal role. A gloomy, unsmiling child may have a contrary effect, possibly causing his mother to question her maternal competence.** Her feeling of failure may possibly prompt the mother to be hostile to the infant's future demands because such demands only deepen her suspicion that she is incompetent at a task women are expected to perform successfully with natural ease.

While the infant smile has been recognized for some time as an important factor in the child–parent interaction, Bowlby (1958) went beyond the acknowledgment of its importance to assert that the infant's smile was an action to which the mother *had to respond* if she wanted to form a relationship with her baby. Whether or not Bowlby is correct in making the response of the mother so critically important, it is true that the mother's response actually does reinforce the infant's smiling. In 1958, Brackbill tested a group of infants 14 to 18 weeks of age to assess the effect of the mother's or caretaker's response. After establishing a base rate of smiling – that is, how frequently the unstimulated infant smiles – Brackbill placed each infant on its back in a crib. If an infant smiled a researcher smiled back, picked him up, and carried him for about 30 seconds. This reward was found to substantially increase an infant's smile frequency over the base-rate performance. Thus, it is clear that although smiling at first can be triggered by nonsocial stimuli – such as an intriguing mobile – it soon is controlled increasingly by social rewards, such as the experimenter's reciprocal smile.

While studies have made clear that the caretaker's response does affect how often the infant smiles, other research has shown that all infants smile with varying frequency, and that the *tendency* to smile is not learned through social conditioning. **Among groups of infants raised in families – as opposed to institutions – a wide range of smiling frequency has been noted. Some infants, it was found, will smile often at a strange face or even at a mask; others, on seeing the same stranger or mask, will maintain a stony gaze.** A critic might contend that these reactions are the result of early social conditioning. For a socially "uncontaminated" test group, we can examine newborn babies. However, we find that they, too, span a wide spectrum, from the enthusiastic smiler to the invincibly dour infant. Moving further from the possibility of social conditioning, we find that **even premature babies display different smiling frequencies, some smiling readily, others not at all, even when coaxed and stimulated (Freedman 1966). Thus, the initial smiling tendency is obviously unlearned, for it is visible in many infants before they have any consistent contact with other humans. The fact that smiling is an unlearned response, however, does not mean that reinforcement has no effect on the infant's subsequent behavior. It remains true that the infant's smiling is conditioned by his caretaker's response, and this reciprocal pattern is a significant factor in the development of the child–parent interaction.**

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Effect of the Smile on the Mother. **The infant's tendency to smile a lot or little can affect the nature of the mother-child relation. The mother typically interprets the smile as a sign that her baby is happy and content and, by inference, that she is an effective mother. If her infant is an infrequent smiler she may begin to doubt her maternal competence and worry about her ability to make her infant contented and pleased.** Although frequency of smiling can be increased if an adult responds to the child's smile by picking him up (4), there are unlearned differences among infants in the tendency to smile. **Even among family-reared infants who have had considerable exposure to a human face, some will show lots of smiling to a strange face or a clay mask, while others will smile very little. These individual differences are also present in newborns. Some premature babies were consistently high smilers; others rarely smiled (13).** Moreover, infant boys who smile frequently tend to be fatter than infrequent smilers, who are often short and wiry. These differences in the readiness to smile may play an important role in the dynamic interaction between the mother and her infant. The smile rewards the mother, and increases her involvement with her infant. The mother behaves as if the smile were a reinforcement for her efforts—the infant's way of rewarding the mother for her good works. If some babies are biologically predisposed to be easy and frequent smilers, they are likely to elicit more approach behavior from their mother than nonsmiling infants.

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4. Brackbill, 1958

13. Freedman, 1966

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Attachment to the Parent

Traditional Views: Feeding Most Important

The infant's perception of his mother as the source of food, care, and comfort traditionally has been regarded as the root of the close infant–mother relationship. Infants were thought to form an attachment to their mothers because they associated their mothers with good feelings – for example, being warm and well-fed. In this view, the mother is a pleasure stimulus. Because the infant sees his mother as a source of pleasure, he stays close to her and often protests her absence, however brief. At first, he cries out to his mother, and later goes to her, when he is hungry.

It is not long before he generalizes the hunger stimulus to include other discomforts, such as fatigue, sickness, cold, and injury. He turns to his mother to relieve these pains just as he turned to her to relieve his hunger pangs with food. However, it is essentially the feeding process, in the traditional view, that determines whether the infant regards his mother as a pleasing or displeasing stimulus. If feeding is an unpleasant experience – whether because the mother is brusque or anxious with the infant or because there is not enough food – the infant may begin to regard the mother as an unpleasant stimulus. If feeding remains a stressful experience for an extended time, the baby may reverse his normal response and avoid his mother. Such a negative response to feeding also may be generalized. That is, if the hungry child finds his mother can give him no relief from his hunger pains, he may extend his negative response to include other pains. Thus, instead of approaching his mother when he is tired or hurt, he may avoid her.

As the infant develops, he also generalizes his social experiences with his mother to include other people. He begins to accept and socialize with others. However, if the infant's relationship

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with his mother is again one of avoidance, he may avoid others as well, and never form close social relationships. Whatever the possibilities for behavior, the important point in the traditional view of the infant – parent relationship is its contention that the infant's social development begins with his central relationship with his mother – and specifically, with his early feeding experience.

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THE CONCEPT OF ATTACHMENT

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The concept of attachment is relatively new in our theorizing about child development, but it has an important connotation that was missing from earlier theoretical discussions. The traditional interpretation of the close relation between an infant and the mother assumed that the relationship was due to a conditioning of positive reward value to the mother. The interpretation was usually stated in the following way. Any new stimulus that is associated with a reward (food, warmth, or a pleasant state, for example) acquires reward value itself. Through learning, the mother, as a stimulus, comes to signify pleasure and contentment in much the same way that the buzzer became a sign of food for Pavlov's dogs. Furthermore, the infant will learn that to approach this source of pleasure will lead to effective gratification of his needs with minimal delay. The child learns the important response of looking for and approaching his mother when he is hungry.

According to the principle of *stimulus generalization*, a response learned to one stimulus is likely to be made to stimuli which are similar to the original one. Other sources of pain and discomfort (e.g., injury, cold, and illness) are sufficiently similar to the pain of hunger that the child should make the same response he made when hungry. That is, the child who approaches his mother when hungry should also approach her for nurturance (gratification of needs) when he is in pain and discomfort for other reasons. Further, because the mother is similar to other people, the infant should, in varying degrees, generalize his approach response to other people. In brief, the initial feeding situation was regarded as the basis for learning whether the mother is rewarding, and whether approaching the mother—and, by generalization, other people—leads to gratification.

If the initial feeding experience was not rewarding because the mother was tense, held her baby in an awkward manner, force-fed him, or handled him roughly, the child would experience some pain in association with the stimulus of the mother, and the sensations of hunger. If the painful stimuli occurred frequently enough and over a long enough period of time the stimulus would acquire a negative or anxiety-arousing value and she would become symbolic of discomfort rather than of pleasure. As an organism's innate reaction to discomfort and pain is withdrawal and avoidance, the infant would learn to avoid rather than to approach the mother. Moreover,

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the infant would not learn that approaching people in a state of discomfort might lead to gratification of his motives. Another infant, for whom the feeding experience has been predominantly pleasant, will be more likely to look to others for gratification of his needs and motives.

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Newer Ideas

In recent years this attractively simple concept of social development has been challenged by newer experimental evidence. Several important studies have introduced the importance of such variables as pleasurable physical contact and eye contact between mother and infant, as well as stimulation by the mother, to an understanding of the infant's attachment to his mother and his subsequent social development.

In one such set of experiments, Harlow (Harlow and Zimmerman 1959; Harlow and Harlow 1966) worked with infant monkeys. He placed one group of infants with substitute "mothers" made of a roll of wire mesh, and another group with "mothers" made of the same material covered with terry cloth. Both kinds of artificial mothers "fed" the monkeys from bottles set into their "chests."

According to the traditional theory, the infants who fed from the wire-mesh mother should have preferred this mother to the terry-cloth mother because the wire mother relieved their hunger pains. Harlow's findings contradicted this expectation. He found, instead, that both the infants who fed from the wire-mesh mothers and those who fed from the terry-cloth mothers invariably went to the terry-cloth mothers and clung to them rather than the wire-mesh mothers. The monkeys originally grouped with the wire-mesh mother would feed from her, but would quickly abandon the wire-mesh mother and go to the terry-cloth mother to spend the time between feedings. Thus, the infant monkey seems to have a basic need that is second only to the hunger drive. Bowlby (1958) described this need in humans as the need to cling or to maintain physical contact. "There is in infants," Bowlby stated, "an in-built need to be in touch with and to cling to a human being." He maintained that clinging, along with crying, smiling, sucking, and mother-following (that is, keeping in visual or auditory contact with the mother) are the five instinctual responses with which an infant binds himself to his mother. Satisfying these responses seems to be vital to the infant in the first few months of his life.

Besides playing an important role in forming the initial mother–infant attachment, the clinging response also helps the infant deal with fears. Harlow tested infant monkey reactions to a fear-producing stimulus by placing a large model of a spider in the monkey cage, which also contained wire-mesh and terry-cloth mothers. At the appearance of the spider, the monkeys fled to the terry-cloth mother and clung to her. They ignored the wire-mesh mother. In further trials, Harlow found that clinging to the terry-cloth mother quieted fears more readily than clinging to the wire-mesh mother. He also found that the presence of the terry-cloth mother emboldened the monkeys to approach the feared spider model. When left with the wire-mesh mother, the monkeys hung back from the spider and were afraid to explore anywhere near it.

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As Harlow's experiments made clear, the need to cling is a fundamental response in infant monkeys. The clinging response also has been found in other animals and in the human infant as well. We are all familiar with the 1-year-old infant who runs to his mother and clings to her when the postman appears.

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The results of several important experiments have complicated this simple social learning view. One of the most important series of studies was conducted by Professor Harry Harlow and his colleagues at the University of Wisconsin. Harlow placed infant monkeys with "mother" monkeys that were constructed of wire mesh. Some of these infants were fed from a bottle attached to the "chest" of a plain wire-mesh mother. Others were similarly "fed" by a wire-mesh mother that differed in just one respect from the other mother—it was covered by terry cloth (see Fig. 6.1). When the monkeys were given the choice of going to either mother, the animals characteristically chose the terry-cloth mother and spent more time clinging to her than to the plain wire-mesh mother. This was also true for infant monkeys fed only from the wire mother, and never fed from the terry-cloth mother. The infant would go to the wire mother only when hungry, feed until satisfied, and then return to the terry-cloth mother for most of the day (26, 27).

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Because the pain associated with hunger is reduced by the wire but not by the terry-cloth mother, the older theory would predict that the wire mother who supplies the food should be the most rewarding stimulus and, therefore, the one with whom the monkey should spend the most time. The fact that this prediction is incorrect forces us to reassess our basic hypothesis about those events that cause an infant to become attached to another figure.

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Further, when a fear-provoking stimulus (a large wooden model of a spider) was placed in the cage with the monkey, he ran to the terry-cloth mother rather than to the wire-mesh mother (see Fig. 6.2). The terry-cloth mother was more effective in reducing the infant monkey's fear than the wire mother was. When the terry-cloth mother was present, the young monkey was more likely to venture out to explore the fear-arousing stimulus. When the young animal was with the wire-mesh mother, he was more fearful and was less likely to explore the open space around the strange and "threatening" object (see Fig. 6.3).

A series of related studies stimulated by Harlow's original work suggest the following conclusions. If the young monkey is to develop normally he must have some interaction with an object to which he can cling during the opening months of life. Another monkey is best—but a terry-cloth surrogate allows the infant to cling and is, therefore, better than the wire surrogate. The clinging response is natural to the monkey, as perhaps scanning and vocalizing are to human infants. In time of stress the monkey runs to the object to which he normally clings. For example, if two chimpanzees are placed in a strange situation, they show increased clinging to each other, as if the clinging reduced fear or distress. As the chimpanzees become familiar with the originally strange situation, the mutual clinging decreases (33). There seems to be a strong similarity between this behavior in the chimpanzee or the monkey and that of a 1-year-old human child who runs to his mother and hides his face in her skirts if a strange person enters the house or an unexpected noise is heard.

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26. Harlow & Zimmerman, 1959

27. Harlow & Harlow, 1966

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Generalization of Social Responses

In the normal infant's social development, he gradually generalizes his response to his mother to include other adults. However, the infant's ability to accomplish this is not automatic. It is developed during his interaction with his mother, as the following experiment with institutionalized infants graphically illustrates (Rheingold 1956). **For eight weeks, Rheingold played mother to eight out of sixteen 6-month-old infants. For eight hours a day, five days a week, she fed, changed, and bathed them, talked to them, smiled at them, and played freely with them. The remaining eight infants received routine, impersonal, institutional care from a changing variety of volunteers. The overall effect was that the eight experimental infants cared for by Rheingold had a single caretaker for an extended period and received more individual attention and care.**

Each week during the test period and for four weeks after, all 16 infants were tested. Among other items, the test measured each infant's social responsiveness to people, specifically to Rheingold, to another adult who gave the other tests, and to a stranger who appeared at the end of the eight-week period of personal care. The results showed that the experimental infants were clearly more socially responsive to the three test figures than were the infants who received routine institutional care. They expressed their greater social responsiveness – especially to Rheingold – by smiling, "talking," or making some other recognitory facial gesture when any one of the three test figures smiled or talked to them. The actual physical care was not a determining factor according to Rheingold, who maintained that the experimental infants' greater social responsiveness was primarily prompted by the constant visual, verbal, and tactile exchanges between herself as the mother-figure and the infants.

These findings lend firm support to the hypothesis that the infant who learns social responses from an attentive and stimulating mother-figure will more readily generalize those social responses with other adults. Along with the evidence cited in this section, the Rheingold study considerably modified the earlier view that hunger reduction is the central condition for social development. Clearly, many variables are influential, such as physical and eye contact between mother and infant, and other forms of stimulation by the mother or caretaker.

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Consequences of Attachment to the Caretaker

There are two important consequences of these early experiences of attachment and pleasure with the caretaker. First, the responses the infant makes to the caretaker will generalize to other people. Second, the infant should develop a fairly articulated schema (or mental image) for the caretaker's face, form, and voice.

Generalization of Responses from Caretaker to Another Person. The principle of generalization states that if the infant makes a set of responses to one class of stimuli he is likely to make them to similar objects, but not to objects that are very different from the original. An excellent illustration of this principle comes from a study of monkeys who were raised under a variety of conditions.

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This generalization of approach responses from the earliest object of attachment to a similar object also holds for the human infant. The generalization of social responses from a mother substitute to other people has been demonstrated in a rigorous experimental study (*41*). The investigator selected 16 6-month-old infants who were living in an institution in which many volunteers cared for the child. For 8 of these infants (the experimental babies) the investigator herself played the role of mother 8 hours a day, 5 days a week, for 8 consecutive weeks. During this time, she bathed and diapered them, played with them, smiled at them, and tried to be as good a substitute mother as possible. The other 8 infants (control babies) were cared for in the typical institutional fashion—without individual "mother," but with several women performing these motherly duties in a more routine fashion. Moreover, the experimental babies received *more* nurturance than the controls during the 8-week period. Thus the experimental babies differed from the controls in two ways: they had one person care for them consistently during the 8-week period, and they received more caretaking during this period.

All infants were tested each week during the 8-week experimental period and for 4 additional weeks following the termination of the experimental treatment. The test administered included tests of social responsiveness to three kinds of people (the experimenter, an examiner who gave them other tests, and, at the end of the 8-week period, a stranger), as well as a postural development and cube-manipulation test.

The results revealed that the 8 infants who had been cared for by the mother (i.e., the experimenter) showed much more social responsiveness to the experimenter, the examiner, and the stranger, than the control children did (*41;* see Fig. 6.4). That is, when these people smiled or talked to the children, the experimentally treated infants were more likely to smile back or show some facial reaction to the adults than the normally treated children, the effect being most marked in response to the experimenter. These results clearly support the hypothesis that acts learned in response to a nurturant and socially stimulating caretaker will generalize to other people. There were no significant differences in the motor development of the two groups as measured by the cube and posture tests. Apparently, the experience of having the consistently nurturant and stimulating mother figure had minimal effect on simple motor skills, but a dramatic effect on social behavior (*41*). The author believed that the critical factor responsible for the increased social responsiveness of the experimental babies was the reciprocal and playful social stimulation that occurred between child and adult.

41. Rheingold, 1956

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Separation Anxiety

The second type of fear that seems directly linked to the infant's attachment to his mother is *separation anxiety*, and examples are plentiful. The infant shopping with his mother is left sitting in the grocery cart while his mother goes into the next aisle. As she disappears around the corner, the infant begins to cry. Another mother feeds and changes her baby and then walks out the back door to hang the wash in the yard. Again, the infant protests by crying. Both infants felt separation anxiety.

The onset age for separation anxiety varies among different cultures. Generally, the closer the mother–infant bond, the sooner separation anxiety will appear. For example, Ugandan mothers

196 have almost constant physical contact with their infants. They breast-feed them until they are 2 years old and carry them in close-fitting slings everywhere they go. Ugandan babies, who are completely unaccustomed to being parted from their mothers, exhibit separation anxiety as early as 6 months of age (Ainsworth 1967).

In Western cultures, the infant displays the same anxiety, but two to four months later than the Ugandan infant. The average American baby, for example, shows anxiety at separation from his mother at about 10 to 12 months of age. Anxiety becomes strongest at around 1 year and then declines. The lateness of the anxiety onset in the American infant compared to the Ugandan infant seems related to the relatively diminished physical contact between the American mother and the infant. For example, [redacted] In addition, American infants have little physical contact with their mothers except when they are being cared for. [redacted]

Several explanations of why an infant undergoes separation anxiety have been offered. The concept of the discrepant schema is already somewhat familiar from our discussion of stranger anxiety; as applied to separation anxiety, the discrepant schema extends to more than just the mother's face or body. If a mother is always with her infant, as the Ugandan mother is, she soon becomes an integral part of each schema he develops. When she disappears from his view in the kitchen, his schema for that room is violated, anxiety is created, and the infant cries. However, the American infant, who spends substantially less time in contact with his mother than the Ugandan infant (though much more than infants in many other cultures), takes longer to integrate his mother as an essential part of his schemata. Therefore, he does not cry on separation until later in his infancy, when his schemata are developed to the point where his mother's departure will violate them. This interpretation, like one of the discussed interpretations of stranger anxiety, bases onset and intensity of separation anxiety on the state of the infant's schemata. The available data suggest that the mother-schema discrepancy may be more relevant to separation anxiety, and a self-schema discrepancy more revelant to stranger anxiety.

Separation Anxiety. A second form of anxiety makes its appearance in American infants of about 10 months of age, and begins to vanish by the time the child is 18 months of age. The event that elicits the fear is different from the one that causes stranger anxiety. The child is playing in the living room with some toys; he sees his mother go to the front door and leave. As the door closes he begins to cry. This is separation anxiety. A 7-month-old American infant would typically not cry in this situation. Why then does the 1-year-old? On the surface, this fear does not seem similar to stranger anxiety. The child has seen the mother leave the house many times and, therefore, this event should not be discrepant from an acquired schema. Before considering various interpretations let us compare the experiences of a typical middle-class American infant with those of an infant from another culture.

The American infant spends most of his time in a crib in a room separate from the mother. During at least half of his waking hours he is alone scanning the room, playing with his fingers, watching shadows on the wall, studying a mobile, playing with his crib, watching the curtains. The mother comes to her baby primarily when he cries, when she thinks he is hungry, or when she thinks he needs a diaper changed. The single human being he comes to know better than any other is his mother. However, because his mother is not always near him, he also learns to make responses to objects, such as pieces of blanket and stuffed animals in his crib. Many American infants become intimately attached to their furry animals or pieces of blanket.

Let us now look at a baby raised in a different situation—a small hut in Uganda. Uganda is a small country in the Eastern part of Africa tucked between Kenya on the east and the Republic of the Congo on the west. Uganda babies are typically nursed until they are 2 years old. Most American [redacted] Uganda mother is usually available to her child and the infant is often fed on demand. Toilet training is begun early and is initiated by the mother, who holds the baby in a squatting position with the mother supporting him and the baby holding onto the mother. Thus the infant makes clinging responses to the mother early in the first year while he is being bowel-trained. The American mother usually lets her baby soil his diapers during the first year, and the baby lies passively in the crib while he is being changed. Also the Uganda mother carries her baby with her most of the day—either straddled across her hip, or held in place on her back by a sling of cotton cloth. The baby goes with the mother most of the day and does not experience the mother's leaving the room or the hut, an event the American baby experiences many times each day.

[redacted] the Uganda baby spends most of his time being held by someone (1).

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The Uganda baby shows anxiety to separation from the mother as early as 6 months of age— [redacted] (1). Why should the 6-month Uganda baby cry when his mother leaves when [redacted]? There are several possible interpretations. One involves the earlier notion that a discrepancy from a schema elicits anxiety. As the Uganda infant is usually with his mother, the perception of the mother leaving him is an obviously discrepant event. If he has no other response to make to it he will cry.

Because the American infant is not with his mother continually he requires more time to develop a schema in which the mother is an essential stimulus element of his immediate situation. That is, the infant has some schema for his immediate context and when he is very young the mother is not an essential part of this schema. However, as he matures and the mother becomes a more distinctive object, it becomes more likely that if she is in the room where he is playing, she will be an essential part of his schema for the "room." It is reasonable to assume that the more regular the presence of the mother, the earlier the infant will reach the point where he includes the mother as part of his schema. The Uganda baby is with his mother almost continually, so we would expect him to regard the mother as an essential part of every situation. Her absence presents a discrepancy that elicits anxiety. The American infant does not reach this stage until 10 or 11 months of age.

The above interpretation of separation anxiety rests in part, on the same fundamental principle that was used to explain stranger anxiety—even though these two fears do not look similar on the surface. There is, however, a second possible interpretation with a slightly different flavor that is more closely related to our earlier discussion of attachment.

1. Ainsworth, 1967

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A recent series of studies by Rheingold (1969) has found that if an infant can do something to bring himself into closer contact with his mother, he seems to be less fearful in otherwise frightening circumstances. Rheingold placed 10-month-old infants in a strange, empty room. In the first trial, she left them with their mothers; in the second, with a stranger; in the third, with only toys; and in the fourth trial, they were completely alone. Infants left in the room with their mothers did not cry at all. Those left alone with a stranger or with toys usually began to cry within 60 seconds after entering the room. From these findings, we could conclude that the presence of the mother shields the infant from the anxiety he would otherwise feel in a strange room.

Further experiments in this study, however, added another dimension to this conclusion. Rheingold found that if an infant subjected to separation and strange surroundings can do something to bring himself into visual or bodily contact with his mother from time to time, he is less fearful. A 10-month-old infant was left with his mother in a room connected by an open door to the strange, empty room in which other infants had cried when left without their mothers. This infant frequently ventured into the empty room on his own, and without crying. Once inside, he would glance about and then crawl back to his mother. He did not cry because he was able to follow a path of action; when he became afraid, he simply crawled back through the open door to his mother. This alternative was not available to the infants in the earlier experiment. Consequently, when they became frightened by the empty room, they could make no response and therefore they cried. Of course, crying, too, is a response, but it is a last-ditch effort the infant resorts to when he cannot lessen his fear by seeing, hearing, touching, or moving toward his mother.

A second view of separation anxiety considers that before the infant resorts to tears, he may try to figure out why a separation situation is different from his familiar schemata. Kagan, in

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an article published early in 1972, noted that when an infant is confronted with a discrepant schema – whether a stranger or a separation situation – he hesitates for a few seconds before he expresses his fear in an outburst of crying. Almost always in the case of visually discrepant schemata – the sight of the gas meter man, for example – the few seconds of hesitation are filled by silence as the infant stares goggle-eyed at the object or person he finds discrepant. According to Kagan, this is not simply a petrified fixation, but evidence of a cognitive process that he calls hypothesizing, which he believes occurs as early as at 9 months of age in the human infant. The infant, according to Kagan, is examining closely the discrepant object and forming hypotheses about what has happened to the familiar object that otherwise fits his schema. When the infant cries it is because his hypothesizing – as he stared enrapt – has failed to interpret the reason for the discrepant person. Because the infant cannot interpret, assimilate, reject, or destroy the discrepant face of the meter man, his fear overcomes him and he resorts to crying, which as we have seen earlier, is an action he associates with comforting by his mother. Kagan has maintained that the same process seems to operate in separation anxiety. When the child fails to hypothesize the schema of his mother leaving him, or the schema of the room with her absent, he becomes frightened and cries. In both stranger and separation anxiety, the infant's negative reaction diminishes as he gets older because his experience broadens; therefore, he can succeed in producing hypotheses that explain discrepant schemata (Kagan 1972).

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This interpretation of separation anxiety implies that the closer the attachment of the baby to the mother, the more frequent and intense the separation anxiety. The Uganda baby, we infer, is more closely attached to its mother than the American baby and this inference fits with the fact that he has many more opportunities to scan, cling, hold, manipulate, and play with his mother than an American baby of the same age.

The opportunity to make a response that might bring the infant into closer contact with the mother seems to allay the infant's fear. In a series of studies Rheingold placed 10-month-old children in a strange room under one of four conditions: with the mother, with a stranger, with toys, or completely alone (*40*). As long as the mother was in the room the infant did not cry. But the infants who were not with their mothers were likely to cry within 1 minute of being placed in the room; the presence of toys or a stranger did not help (*40*). These observations suggest that the strangeness of the room (an event that is discrepant from the child's schema) produced the fear. But the presence of the mother protected the child from anxiety. The critical importance of the availability of a response that brought the child into visual or physical contact with the mother is illustrated in the following observations. The 10-month-old infant was placed with the mother in a room which had an open door that led to the same strange empty room that had made most of the other infants cry. The infants in this situation often crawled into the empty room *but did not cry when they arrived there*. The infant would look around and then crawl back to his mother in the adjoining room. For a short period of time the infant was alone in the same strange room that had made the other infants cry. The difference was that these babies could do something effective if they became apprehensive—they could crawl back to their mother. The infants who cried in the earlier observations could do nothing.

40. Rheingold

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A third explanation draws on the habitual nature of the infant's—and indeed any human's—attachments. The explanation assumes that the infant quickly becomes a creature of habit through the responses he makes to particular stimuli. The 3-year-old prefers, to the point of tears, to be covered at night with a specific blanket, and he wants to sleep only with his soiled and shabby stuffed rabbit. An adult may habitually walk a particular route to his office, though alternate ways are just as short. For the infant, the strongest habitual responses are those associated with his mother. Changes in such simple habits can prompt anxiety, and infants often will cry if these habitual responses are frustrated. According to this explanation of separation anxiety, the infant's common responses to his mother—such as babbling, smiling, and looking—become habitual through repeated performance. When an infant's mother departs, he can no longer make these responses to her. His habitual pattern is broken, anxiety mounts, and the infant cries. Presumably, the infant who has more contact with his mother can form strong habitual responses to her at an earlier age—and therefore feel separation anxiety at an earlier age. This would explain the early separation anxiety—at 6 months—felt by the Ugandan infant. Since the American baby, on the other hand, has less contact with his mother than the Ugandan infant, he develops his habitual responses to her later in his infancy; therefore, he also exhibits separation anxiety at a later age.

A fourth explanation of separation anxiety holds that it is the mother's absence that conditions the infant to feel anxiety. Underlying this explanation is the assumption that the infant is much more likely to undergo discomfort or pain when his mother is gone. Granting this assumption, the infant would anticipate such pain and discomfort when his mother left him. Therefore, her leaving would create anxiety in him. However, the theory fails to explain the behavior of the infant who is seldom parted from his mother, such as the Ugandan infant in Ainsworth's 1967 study. According to this theory, the Ugandan infant who is almost never parted from his mother should not learn the anxiety of separation. Yet, he, too, exhibits it—even earlier than the Western infant who is more frequently separated from his mother and therefore has much more opportunity to learn the anxiety.

Although this fourth theory of conditioned anxiety may not prove to be correct, we still are left with three viable explanations of separation anxiety. The first is that the anxiety is determined by the intensity of the infant's attachment to his mother and, consequently, the development of his schemata that include or exclude her. The second and most recent explanation is that separation anxiety is the result of the infant's failure to produce a hypothesis that explains the discrepant

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schema of the absent or departing mother. And the third theory is that separation anxiety results from the interruption of habitual responses.

As in many areas of psychological explanation, these unidimensional accounts may actually complement each other by referring to different aspects of the same multidimensional process. It is noticeable that the first theory focuses on the infant's feelings or emotions, the second on his cognitive processes, and the third on his behavior. Each in its own terms predicates a discrepancy between the expected emotional, behavioral, and cognitive stimuli, and the stimuli that he discovers when his mother leaves or is absent. These theories ultimately are not inconsistent with each other; all probably can be thought of as aspects of a larger theory of the infant's expectations in general.

There is, however, a second possible interpretation with a slightly different flavor that is more closely related to our earlier discussion of attachment. MCK

The infant, like the older child and adult, learns specific responses to particular stimulus situations. After many repetitions of these stimulus-response chains, such responses become habitual. The adult typically sits in the same chair at breakfast every morning, despite the availability of perhaps three other chairs. The 3-year-old child always takes the same furry toy to bed with him despite the availability of newer and more colorful ones. Moreover, if we prevent the person from making the habitual response he may become upset. If the 3-year-old is not allowed to take his favorite furry dog to bed, he is likely to cry, even though other toy dogs are available. 226

It appears, therefore, that when a response becomes very strong to a particular situation or object (i.e., habitual), disruption of the response can lead to anxiety.

Let us see if this hypothesis applies to separation anxiety. The baby is continually responding to his mother, looking at her, smiling, vocalizing, and clinging to her. The frequency of these actions increases when he is mildly aroused. When the mother leaves, the child is prevented from making these habitual responses; the response sequence is disrupted and he may cry. The Uganda baby, who is continually with his mother, builds up stronger responses earlier than the American infant does; thus he should show separation anxiety earlier. 227

This interpretation of separation anxiety implies that the closer the attachment of the baby to the mother, the more frequent and intense the separation anxiety. The Uganda baby, we infer, is more closely attached to its mother than the American baby and this inference fits with the fact that he has many more opportunities to scan, cling, hold, manipulate, and play with his mother than an American baby of the same age.

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In sum, it appears that separation anxiety may involve three components—the discrepancy that is produced by being separated from the mother, the disruption of habitual responses to the mother, and the inability to make any relevant response that brings him to his mother. Separation anxiety should vanish when the mother's absence is no longer a discrepant event or when the child can do something about the mother's absence. Both of these changes occur with age. As the child grows, he experiences more frequent separations from his mother and, with maturity, he is able to interpret her absence and reassure himself of her return.

This interpretation of separation anxiety, which is conjectural, differs from a past interpretation that emphasized the conditioning of anxiety to the mother's absence. The older interpretation assumed that the child was most likely to experience pain and distress when his mother was absent

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and not available to care for him. The conditioned stimulus was the mother's absence and the unconditioned stimulus was the discomfort of hunger, cold, or pain. As a result, the infant learned to become afraid when he saw his mother leave him. The problem with this explanation is that it predicts that infants who are rarely separated from their mothers should be deprived of the opportunity of learning this association, and therefore, should not show separation anxiety. However, the Uganda infants, who are rarely away from their mothers, show earlier and more intense separation anxiety than American infants who do experience periods of maternal absence. Thus the interpretation that assumes that intensity of attachment determines separation anxiety seems more reasonable. 228

Let us now consider infants raised under conditions of minimal contact with a caretaker, where attachment should be very weak. In order to do this, we must look at infants who are raised in institutional environments.

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MINIMAL SOCIAL RESPONSE. The importance of personal attention for an infant's development of social responses such as vocalizing and playing was pointed up in a study of Provence and Lipton (1962). They observed 75 infants in an institution that adequately supplied the infant's physical needs, but provided almost no individual attention. Each attendant had responsibility for 8 to 10 infants during an 8-hour workday. During the remaining 16 hours, the infants saw no one, except at mealtimes when an attendant changed their diapers and propped their bottles. Although the infants had a few toys, the attendants did not have time for reciprocal play or vocalizing in response to the infant. Moreover, there was no close link between an infant's crying and the response of the attendants.

Provence and Lipton found that before 3 or 4 months of age, institutionalized babies were no different from home-reared infants. After this age, however, the infants showed many clear differences. The institutionalized infants seldom vocalized; they did not coo or babble, and they cried little. In addition, they did not accommodate themselves to the arms of an adult; when held, the infants moved their limbs in a satisfactory way, but their trunks were notably rigid and did not assume relaxed postures. By 8 months of age, these infants were very plainly not interested in grasping or approaching toys. They also lost interest in the rest of their surroundings. They showed very little stranger anxiety, fretted and whined rather than crying vigorously, and seldom tried to overcome physical obstacles. The most seriously affected of all behavior, however, was the infants' vocalization and speech development. At 1 year of age the infants did not use any words at all.

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Provence and Lipton observed 75 babies living in an institutional environment in the United States where nutrition and care were adequate and the infants were not physically ill (37). The description of the institutional environment will help the reader appreciate the conditions under which these infants lived.

> The younger group of infants (age 4 days to 8 months) occupied cribs placed singularly in glass partitioned cubicles. The room was clean, cheerful and light with adequate heat and ventilation. The infants were fed in their cribs with bottles propped. When cereals, fruits and vegetables were added to the diet they were also given in a propped bottle with a large holed nipple rather than given by spoon. . . . Sometimes a stuffed toy was placed in the crib for the baby to look at. After about 4 months of age, simple rattles, beads and so on, were placed on a string suspended across the crib sides and the single playpen which contained other age appropriate toys. . . . Each infant in this group shared the time and attention of the attendant with 7 to 9 other infants in the same age range for the 8 hour period of the day when she was present. For the remaining 16 hours of the day, there was no person in the nursery except at feeding time when an attendant who also had similar duties in other nurseries heated formulas, propped bottles, and changed diapers (37).

Not only were the infants fed without the presence of an adult, but there was minimal variability in their experience. There were no vocalizations from other people, no reciprocal play, no close relationship between a child's crying and the reaction of someone else.

In considering how these babies were different from those raised in families it should be noted, first, that there were *no* major differences between normal and institutionalized babies prior to 3 or 4 months of age. It is only after 4 months that the differences became evident. The institutionalized babies vocalized very little; they showed no cooing, no babbling, and little crying. Moreover, they did not adapt their postures to the arms of an adult, "they felt something like sawdust dolls; they moved, they bent easily at the proper joints, but they felt stiff or wooden" (37).

These infants were not picked up very often and, therefore, one would not expect them to make the kinds of postural adjustments that babies ordinarily make. By 8 months of age most of these infants were markedly less interested in grasping or approaching toys, and they began to lose interest in their external environment. During the second half of the first year, body rocking became very common and was more frequent than would be observed among family-reared babies. Stranger anxiety was rare, and the infants' facial expressions were bland and clearly not so expressive as those of family-reared infants. If they were frustrated, they would cry passively or turn away; rarely would they make an attempt to conquer a frustration. Finally, language was delayed. There were no words at all at 1 year of age and vocalization and language were the behaviors that were most seriously depressed. The following is a description of one of these babies at 45 weeks of age.

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37. Provence and Lipton 1962

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Other Variables

The lack of the mother clearly is seen by many investigators as acutely destructive to the infant. There is, as we have noted, sound evidence to support this position. Yet, other investigators have placed less stress on the presence of the mother and point, instead, to the absence of other aids to development. They say—and correctly, as we have seen—that the institutionalized child suffers not only from the lack of a single caretaker or mother, but also from an environment that is generally barren of objects or sounds his senses can perceive. Others point out that the infant also gets little or no verbal or tactile stimulation from handlers or from other persons. They further cite the absence of stimuli that the infant can both clearly perceive in his environment and easily identify as separate.

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Other factors sometimes thought to be significant in affecting the behavior of institutionalized infants are poor nutrition and disease. Even with the general improvement in diets and medical care, it is probably true that many infants are still undernourished in institutions. In conjunction with a lack of stimulation, poor nutrition and increased susceptibility to disease could account for some forms of abnormal behavior and development found among institutionalized infants.

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In connection with Rheingold's findings, it should be noted that no unassailable evidence to date has proven that rearing by one caretaker produces a child who is better developed emotionally or intellectually than the child raised by several caretakers at one time—as in a family where several generations live together. It is the total environmental situation and degree of appropriate stimulation that seem to be most important to the infant's development. Several preliminary studies of collective caretaking (Gardner and Swiger 1958; Gardner, Pease, and Hawkes 1959, Rabin 1957, 1958) showed no adverse effects; in fact, one of the studies (Rabin 1958) indicated that there may be substantial emotional benefits to "multiple-mothering." For example, the children with many mother-figures escaped undue attachment to the parent of the opposite sex as well as feelings of hostility toward their natural mothers, and extreme competition with brothers and sisters (sibling rivalry). Following the conclusions of these studies of multiple-mothering—as well as those of Bowlby and his associates, and of Rheingold, Freud, Burlingham, and Bayley—we come to two conclusions of our own. The first is that since not all motherless infants suffer from poor development, there must be a reason other than maternal deprivation for the condition of those who do suffer such retardation. Second, we may conclude that it is not the deprivation of the mother alone that retards the infant. Rather, retardation may be caused by the lack of the stimulation which the infant's mother would have provided him, and which can be provided by caring and nurturant substitutes.

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Relevant Variables in Institutionalization. In the opinion of some workers, the crucial variable involved in the behavioral correlates of institutionalization is absence of a mother figure. Others tend to blame lack of toys, monotonous sensory environment, poor nutrition, or disease. But neither institutionalization nor mothering is a unitary variable. Institutions vary in the amount of individual attention a child is given, in the degree of sensory and motor stimulation provided, and through the opportunity to play with other children and to learn to manipulate toys and other objects. In the studies cited above, there were marked differences among the institutions involved with respect to all of these variables.

As far as mothering is concerned, among children's own biological mothers there are great interindividual differences in actual procedures of child handling. Furthermore, it can be questioned whether biological mothers are necessarily superior to all mother surrogates in child care. It has not yet been clearly established whether continuous care of the infant by one adult exclusively is more conducive to development of intellectual and emotional health than a setting which includes additional caretakers—so-called multiple-mothering (48). Preliminary studies of infants (15, 16, 38, 39) cared for by more than one mother indicate that divisions of parental responsibility may not necessarily affect either intellectual or emotional development adversely. In fact, one study (39) suggests that such rearing, in the context of a collective Israeli farm, may reduce some of the emotional problems found in overly intense individual family relationships—such as overattachment to the opposite-sex parent, excessive competition, hostility toward the same-sex parent, and extreme sibling rivalry. Obviously, much remains to be learned about the different consequences of individual- versus multiple-mothering, as well as the effects of differing patterns of multiple-mothering (e.g., one central mother figure with assistants versus a more equal division of mothering duties).

The potential danger of speaking loosely about the damaging effects of maternal deprivation or institutionalization without attempting to specify further the actual variables involved, is well illustrated in a report (5) on two residential nurseries in the Soviet Union where psychological care is adequate. In these nurseries, which are maintained primarily for research purposes, children are raised from birth to about 3 years of age. At one

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nursery, the most prominent feature of the child-rearing program is its stress on physical development, including diet, sleep, and, most particularly, an elaborate schedule of daily massages and exercises in which the child is involved beginning at 60 days of age.

At the other, children spend the first 3 years of life in a well-equipped nursery which includes such things as specially designed walkers and playpens. According to Brackbill,

> [M]ore usual than its furnishings is the nursery's program for verbal-motor stimulation of its children. This is regarded by the staff as a matter of great importance and something that merits their sustained efforts. As a part of the overall plan, every nurse has specific duties that she performs each day with all infants individually. As an example of "verbal duties," the task for Nurs. A might be to ask each infant in turn, "Where is the cat?", "Where is the visitor?", "Show me your ear.", "Show me your hand.", and so on. In each case, the child's answer is followed by appropriate reinforcement. When the mother visits—and she is urged to visit often—she has access to the nurse's list of stimulants and is encouraged to further the verbal and motor training herself.
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> Attention to verbal and motor development is carried over to the toddler group. But in addition, a new goal is added to their program of upbringing. Staff efforts are now also focused on the child's development of self-help and independence. . . . The one to three year olds are shown how to pick up their toys before midday dinner, how to feed themselves, how to get along socially with their three table companions at dinner time, how to prepare themselves for a nap after dinner (5, 10–11).

No adverse effects of this kind of institutionalization have been evident in the children at either nursery—physically, socially, emotionally, or intellectually.

If one thinks of the negative aspects of institutionalization in terms of such component variables as the absence of close interactions between a child and mother surrogate, minimal opportunities for social learning and development of motor responses, and lack of varied sensory stimulation, then it appears that the Russian nurseries described above meet few of the criteria for an institution. In many respects, in fact, they appear more closely to resemble well-ordered nurturant homes.

15. Gardner & Swiger, 1958
16. Gardner, Pease, DeMaio & Hawkes 1959
38. Rabin, 1957
37. Rabin, 1958

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Autonomy and the Socializing Process

According to Erik Erikson, the widely regarded psychoanalyst, the socialization period is important to more than the practical "civilization" of the infant. This period in early life also is the time in which the young child develops his sense of autonomy – his ability to act by himself, independent of his mother – as well as his feelings of self-reliance and competence. The growth of all three qualities is basically dependent on the child's control of his elimination and on his expanded sensorimotor skills that allow for much more independence in manipulation, walking, and general movement and exploration. It is in this stage that the child begins the long process of emancipation from his mother. Erikson has stated that if a young child is expected to develop autonomy, he must "experience over and over again that he is a person who is permitted to make choices. He has to have the right to choose, for example, whether to sit or whether to stand, whether to approach a visitor or to lean against his mother's knee . . . to use the toilet or wet his pants" (Erikson 1953). We should note here that the child's desire for self-regulation and self-control becomes quite obvious in the way he organizes his toys and other possessions. During the second year he develops a strong penchant for arranging things precisely his own way in his own miniature universe. If the various conditions for the development of his autonomy are not favorable, Erikson believes, the child's subsequent behavior and feelings about himself may be marked by shame and doubt. This stage of autonomy versus shame and doubt is the second of Erikson's eight psychosocial crises that successively shape a person's life.

Overly protective parents may try to prevent their child from making and carrying through his own decisions, especially when the parents fear that the possibility of physical danger, no matter how slight, may be involved. However, removing the opportunity for the child to make and carry out decisions thwarts the growth of his sense of autonomy, according to Erikson. Overprotective parents constantly pull their children backward into the outgrown status of infancy. The child is not allowed to experience success in executing a new action, and he therefore may be prevented from maturing into a decisive and self-confident person. If a child is given a gradually increasing freedom to handle objects and investigate his world, he usually will set the appropriate pace for himself (although hazards beyond his experience need to be removed). Correctly guided, he will grow in confidence since he will have fewer mishaps and most likely will find his skills equal to his tasks. A child with such positive experience will welcome new circumstances and maintain a vigorous and enthusiastic attitude in the face of challenge. In the next section we shall illustrate the type of practical issue around which the child's striving toward autonomy and self-control often centers – as well as the alternative feelings of shame and doubt that may result when a measure of autonomy is denied the child.

Toilet Training: A Major Socializing Step

Perhaps the most important basic difference between the infant and the socialized child is the latter's control of his bladder and bowel functions. All cultures practice some kind of toilet training, but the cultures differ strikingly on many aspects of such training. In some societies the child is allowed essentially to train himself by imitating other children. It is interesting to note that in cultural history there is an association between severe toilet training and cultural complexity – including the possession of carpets. Even within cultures, there are strong differences in approach and emphasis. For example, working-class mothers in the United States usually start training their offspring earlier (Bronfenbrenner 1958) than middle-class mothers. The latter tend to begin toilet training at the same time that the infant becomes highly mobile and intensely curious – in his second year. More than half of the middle-class mothers interviewed by Sears, Maccoby, and Levin in 1957 said they began to toilet-train their infants when they were 9 to 14 months old and had successfully completed the process by 18 months of age. The law of maturation seems to be responsible for another finding in this study – training took a shorter time with infants whose instruction was begun later. The strong implication here is that the muscles and responses involved in controlling elimination were mature and ready in the older child, while they were immature in the younger.

Erikson, like Freud, recognizes the importance

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Socialization and Autonomy

Erik Erikson, a psychoanalyst, sees this early period as a critical one for the child's development of a sense of autonomy, of self-reliance, and of competence. This depends on the child's growing capabilities during the period and, more particularly, on his mastery of the physiological functions of elimination and his increased skills in manipulation, locomotion, and exploration. These factors may bring him into direct conflict with the social environment, for as the child becomes aware of his control of body functions and of his abilities to move about and explore, he also learns that there are certain rules related to these functions.

If the child is to develop a meaningful sense of autonomy—

> it is necessary that he experience over and over again that he is a person who is permitted to make choices. He has to have the right to choose, for example, whether to sit or whether to stand, whether to approach a visitor or to lean against his mother's knee, whether to accept offered food or whether to reject it, whether to use the toilet or wet his pants. At the same time he must learn some of the boundaries of self-determination. He inevitably finds that there are walls he cannot climb, that there are objects out of reach, that, above all, there are innumerable commands enforced by powerful adults (17, 208).

Parental frustration of the child's attempts to explore and investigate may have some immediate and enduring effects on personality and adjustment. Overprotective mothers may be warm and permissive when their children are infants, but become restrictive and overly cautious when they begin to show signs of independence. Then they attempt to "infantilize" their children and prevent independent behavior, thus retarding the acquisition of mature responses (39).

But if parents are accepting and reasonably permissive, granting moderate degrees of autonomy (freedom in exploration, manipulation, and investigation), the child is likely to derive some satisfaction from his own discoveries and from the pleasurable exercise of his new skills. Such a child is likely to become self-confident and spontaneous in his behavior, approaching new situations without anxiety and reacting enthusiastically to novel and challenging situations.

Socialization and Toilet Training

There are wide cultural variations in the time of beginning toilet training. While lower-class American mothers tend to begin this training early (7), middle-class mothers begin the baby's toilet training during the second year—at the same time they are trying to socialize his strong needs for autonomy and exploration as well as his seemingly irrepressible curiosity. Among the middle-class mothers interviewed in one study (52) the majority initiated toilet training when the child was between 9 and 14 months, and completed it at approximately 1½. In general, those who started the training later required less time to accomplish their goals than those who started earlier.

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By age 3, the average toddler stands about 3 feet tall—boys at 38 inches and girls at 37.6 inches. The average weight is 33 pounds for boys and 32.5 pounds for girls. While height and weight differences between boys and girls are negligible, the tissue content of their bodies is distinctly different. Boys have more muscle tissue and girls have more fatty tissue.

A toddler's height gives a fair indication of what his stature will be as an adult. There is a .70 correlation between heights at these two stages, but even this relatively high correlation leaves room for the occasional pint-sized toddler to shoot ahead of his peers later in childhood to become an impressively tall adult.

While he is growing taller and adding weight, the upper half of the toddler's body is assuming the proportions of the adult's body. During this period, the growth speeds of different body parts change. The growth of the head slows down, the trunk grows faster, but the limbs accelerate more than any other part of the body. This stage transforms the 3-year-old with his protruding abdomen and short legs into the 6-year-old whose stomach has drawn in, whose legs have lengthened, and whose head size has come into proper proportion with the rest of his body. Now the child appears much like a scaled-down adult—he has roughly the same proportions, but a different body size.

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By age 3, the average boy stands about 38 inches tall and weighs about 33 pounds. The average girl is almost as tall (37.6 inches), and nearly as heavy (32.5 pounds) (61). Figure 8.1 shows the average yearly gain in pounds and inches of boys and girls from birth to 5 years of age.

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As a result of gradual increases, the average 5-year-old boy has attained a height of 43.6 inches and a weight of 42.8 pounds. At age 5, the average girl's measurements are roughly comparable—although, again, the boy is slightly taller and heavier (61).

Children tend to maintain their relative standing in height and weight during the preschool period. Those who are tall and heavy for their age at 2 years are likely to be tall and heavy, compared with other 5-year-olds, when they are 5. The correlation between heights at ages 2 and 5 is over .80, and the correlation between weights at these ages is about the same (51).

The child's stature during the preschool period is a moderately good predictor of his height in early adulthood, the correlation between heights at these two stages being about .70 (51). A correlation of this magnitude, although highly significant, indicates that quite a few individuals do shift in relative height between these two age periods; many who are short preschoolers, compared with their peers, become medium-tall or tall adults.

During this period the child's body form is also becoming more mature. As the upper parts of the body begin to approximate adult size, their growth slows down and eventually stops, giving the lower extremities a chance to catch up by continued growth. Thus, during the preschool years, head growth is slow, limb growth is rapid, and trunk growth is intermediate (59). The nursery school child generally has a relatively large, round, and protruding stomach, but by the time the child reaches his sixth birthday, his body proportions are a great deal more like those of an adult.

Although the boys are only slightly heavier than the girls, there are marked sex differences in body composition—the girls have more fatty tissue, while the boys have more muscle tissue (22, 23).

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Skeletal Growth

The child's skeletal system, too, is continuing to mature. Bones are forming out of the malleable cartilage at an increasing rate and in greater numbers. Existing bones also are becoming larger and, at the same time, harder. Teeth, too, are developing—between 2 and 3 years of age—toward the completion of the "baby teeth" that the child retains until the end of his sixth year. At 2½ or 3 years, the toddler is fully equipped dentally to eat the same food his parents eat.

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Along with these changes in body proportions, the child's skeletal, muscular, and nervous systems are becoming more mature. More and more of the cartilage in the child's skeletal system is becoming replaced by bone; the size and number of bones in the body increase, and they become harder. Between 2 and 3, the child's set of temporary teeth is generally completed, and he is adequately equipped to eat adult food.

* * *

Muscular Growth

The muscular system that supports and moves the bones grows in step with them. Up to about the fourth birthday, the growth of the muscles is proportional to the growth of the body in general. However, at the end of the fourth year, the muscles begin to grow at an accelerated rate—so rapidly that during the next year, three-quarters of the child's gain in weight is accounted for by additional muscle tissue (Thompson 1954). Not all muscles are growing at the same rate during this peak-growth year, however; the larger muscles develop more than the smaller ones. Thus, the child is better at gross actions—for example, a carefree, one-armed sweep of objects from his play table—than he is at turning the pages of a book or buttoning up a sweater.

The toddler also is physiologically better equipped to indulge in the persistent investigation and furious activity that characterize his age. His breathing has become slower and deeper, permitting sustained activity. His heart rate has steadied and slowed down, and, at the same time, his blood pressure has increased (Thompson 1954).

Significant changes in muscular development also occur during this period. Up until about 4 years of age, growth in the muscular system is roughly proportional to the growth of the body as a whole. Thereafter, the muscles develop at a faster rate, so that about 75 percent of the child's weight increase during the fifth year can be attributed to muscular development (59). Throughout this period, however, the larger muscles remain better developed than the small, fine muscles—partly accounting for the fact that the young child is more skillful in activities involving large movement than in those involving finer coordinations. Needless to say, individual differences in strength and muscular development will depend on many factors, such as the child's constitution, general health, and habits of eating, sleeping, and activity.

Other physiological changes also increase the child's endurance and enable him to participate in more strenuous activities. During this period, respiration becomes deeper and slower; heart rate also slows down and becomes less variable; conversely, blood pressure increases steadily (59).

Nervous System

In conjunction with his bones and muscles, the toddler's nervous system is developing and becoming more refined. At the start of the toddler stage, his brain, the core of his nervous system, has reached 75 percent of its final weight (4 pounds for the adult male). During the next four years, the brain increases its size still more, until at age 6 the child's brain weighs about 3½ pounds, 90 percent of its adult weight. In the same period, between 2 and 6 years, the nerve fibers in the higher brain centers become myelinized—that is, they are sheathed in myelin, a fatty white substance that helps to speed up the transmission of nerve impulses. The myelinization of nerve fibers in the other regions of the child's body has been almost completed at this point.

The nervous system grows rapidly in the nursery school years. For example, the child's brain has reached 75 percent of its adult weight by the end of the second year; by age 6 it has increased to 90 percent of its adult weight (36). Myelinization of the nerve fibers, which has already been nearly completed in the lower portions of the body, is generally completed in the higher brain centers during this period.

Just as other characteristics of the toddler are

225 becoming more like an adult and less like an infant, his physiological response to infections undergoes a marked change. Temperatures in illness are less dramatic than before, but the illness itself often afflicts the toddler for a longer time now. However, his more developed and generally stronger body is better equipped for these longer sieges of illness, and there is less risk than during infancy that any disease will affect his heart.

During these years, the child's reaction to infection changes. Infections generally produce less of a temperature increase than they did during infancy, but the duration of the illness is generally longer. Moreover, the possibility of serious heart symptoms following a disease is smaller than it was during the first 2 years of life.

59. Thompson, 1954

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Psychomotor Development

The continuing development of muscles, bones, and nerves has expanded and refined the toddler's repertoire of physical skills. Now he runs in a smooth, regular rhythm, rather than jerkily as he did earlier. He can slow down, speed up, turn corners, and stop with greater finesse. He can climb upstairs as an adult does and leap off the sandbox seat with both feet at the same time, instead of putting one foot out ahead. He can jump a foot into the air and imitate the flamingo's one-legged stance—for a wobbly moment.

At 3, his manual skills, too, have become somewhat more sophisticated. Since these skills require small motor coordination, however, they

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are not as advanced as his abilities that depend on the faster-developing large muscles. He is steady-handed enough to stack as many as 10 blocks, three or four more than he could manage when he was 2 years old. When he works with crayons or pencils, he makes strokes that are firmer and clearer, more organized and innovative. If shown how, he can fold a paper in half vertically or horizontally, but he cannot yet master the diagonal fold.

By his fourth birthday, the child is even more accomplished in locomotion because of the increasing ability of his legs to act independently of each other and the rest of his body. He can control his walking and running better, adjusting and changing his pace more quickly, and inserting such footwork as his newly acquired ability to skip. His up-and-down jumping has been outmoded by his new capacity to broad-jump from both running and standing starts.

The muscular independence evident in the leg movements of the 4-year-old also is present in other parts of his body. His arms operate in a much more articulate manner, working without heavy reliance on torso action, as they did at ages 2 or 3, when he threw a ball with his entire upper body.

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Psychomotor Development 284

The progressive maturation of the preschool child's neuromusculature lays the foundation for increased skill in psychomotor activities. Learning plays an increasingly greater role in these improvements, but as with younger children, expansion of the repertoire of motor skills must await neuromuscular development.

By age 3, the persisting traces of infancy in the child's motor behavior have about disappeared (24).

> He runs with more smoothness, accelerates and decelerates with greater ease, turns sharper corners, negotiates sudden stops. Can go upstairs unaided alternating his feet. He can jump down from the bottom tread with both feet together, whereas the child aged two leaps down with one foot leading. [A] three [year-old] can jump upward with both feet as much as twelve inches . . .
>
> he can stand on one foot for a precarious second or more. . . . In the eyes of the three-year-old child himself, his psychomotor development has one especially significant ramification—he is now ready for a tricycle, instead of a "mere kiddy-car with its primitive propulsion" (24, 41–42). 286.

There are other indications of the average 3-year-old's expanding psychomotor development. He can build a tower of 9 or 10 cubes as opposed to the 2-year-old's 6 or 7. In drawing, his strokes are becoming better defined, less diffuse, and less repetitive. He can fold a piece of paper vertically or horizontally, but still not diagonally, even with the aid of a model (24).

By 4, the child's psychomotor skills have increased still further. He can run more smoothly, and is better able to break up the regular rhythms of his stride. Unlike the 3-year-old, who usually is able merely to jump up and down, the 4-year-old is able to make moderately good running and standing broad jumps. He can also skip, though he is still unable to hop. His new athletic feats are partially a function of greater independence of his leg musculature:

> Here, as elsewhere, the principle of individuation is at work. There is less totality in his bodily responses; legs, trunk, shoulder, arms react somewhat less in unison. This makes his joints seem more mobile. Where at two and three, he would merely toss or hurl a ball in a propulsive manner (with much torso participation), he can now swing back a more independent arm and execute a strong, over-hand throw (24, 47).

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Psycholinguistics

While we seem to know what the child does in assembling his vocabulary and making sentences, we do not as yet understand how he does it. Some of the possible answers to this ancient mystery of language development have been put forward by the proponents of a new field of study called psycholinguistics. Although psycholinguistics—the study of the acquisition and use of structured language—has been an area of concerted study for barely a decade, it has greatly illuminated the development of language in the young child. Research in psycholinguistics has been concentrated on the child's acquisition of grammar or syntax, the rules that control the building of sentences.

Traditionally, psycholinguists have viewed the grammar of a language as different from its meaning. They have considered language to be comprised of two major facets, structure and meaning. Grammar or syntax is an element of a language's structure—it is the set of rules for assembling words into sentences. Other structural elements are the language's system of sounds (its phonology) and its rules about the production of words from these sounds (morphology). Language meaning, on the other hand, resides in the definitions or associations of the arbitrary signs (words) attached to objects, people, or events. It is the structure of language, not the meaning, that the psycholinguist studies. More recently, psycholinguists have recognized that syntax and meaning are inseparable, and have shifted to the study of the grammatical meaning of the relationship between words in addition to the lexical meaning of individual words.

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Psycholinguistics. While the infant's sound production and vocabulary growth have been traditional subjects of research, some other complex problems of language acquisition have only recently been investigated systematically. The new and dynamic field of psycholinguistics, devoted to "the study of the acquisition and use of structured language" (*20*), has emerged during the last decade and has already made many significant contributions to our understanding of early language development. The major focus of psycholinguistic research has been the acquisition of grammar or syntax, the rules for putting words together.

Every language has two major aspects: *structure* (the basic units, words and sounds, and rules for arranging them) and *meaning* (conventional, arbitrary signs for referents, for objects and events). The structural aspects consist essentially of the sound system (phonology), rules for formation of words from sounds (morphology), and rules for word combination (grammar or syntax). These aspects, the *linguistic system*, rather than the social-communicative functions of language, are studied by psycholinguists. Let us again review some basic information about this field.

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SOUNDS, WORDS, AND SENTENCES. A brief review of the primary structural elements of words that we discussed in Chapter 6 may be useful to a fuller understanding of psycholinguistics. The most fundamental sound in any language is the phoneme, a class that includes vowels and consonants, such as *o* and *t*. Phonemes are combined to form larger units called morphemes, which are the shortest units of a language that carry meaning. They may be words, such as *ma*, *pa*, *go*, or they may be used to form words. The grouping of words into sentences is governed by syntactic rules, or grammar.

Although, as noted above, the syntax of language is separate from its semantic meanings, one element of syntax—the *deep structure* of a sentence—is related to meaning. Even the simplest sentence has two types of structure—a *deep structure* and a *surface structure*. The surface structure is the order and relations among the words of a sentence; it operates at the phonetic level. The deep structure plunges below the literal level and indicates the sentence's underlying semantic meaning. The deep structure is much like a diagram of the semantic content of the sentence.

Recall that the elementary sounds of a language are phonemes—"for the most part, vowels and consonants, . . . correspond roughly to the letters of an alphabetic writing system" (*8*, 247; see pp. 188–189). Phonemes are arranged into larger units called morphemes which are "similar to, but not the same as, words" (*8*, 247). "Free morphemes" can stand alone, e.g., the words *ask* and *cat*. The words *asked* and *cats* are *not* single morphemes, however. *Asked* is composed of a verb and the ending *-ed*, indicating past time; *cats* is made up of a noun and the ending *-s*, which signifies plurality. These endings are morphemes that cannot stand alone; they are called "bound morphemes."

Each language has its own rules governing the combination of phonemes, permitting some combinations, and prohibiting others. In English there are no morphemes beginning with *ng* and the sequence *zb* never occurs, although these combinations occur in other languages.

At the next descriptive level, "the elements are morphemes, the smallest units of meaning. From morphemes, words are composed by morphological rules and sentences by syntactic rules" (*8*, 252). Grammar, or syntax, refers to the set of rules for creating sentences from words—that is, with syntax, phrases and sentences can be generated.

The study of semantics, which concerns meanings or referents, is generally separated from the study of phonology and grammar. Obviously, understanding language requires understanding both meaning and structure; the syntatic description of a sentence consists of both "deep structure" and a "surface structure." "Every sentence, however simple, has some kind of deep structure related to some kind of surface structure by means of certain transformations" (*42*).

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The "deep structure" of a sentence is related to its underlying meaning; it is an abstract representation of the relations involved in the semantic interpretation of a sentence. The "surface structure" refers to the overt, observable orderlings and relations among the words, the "sound" of the sentence. "The deep structure contains all information relevant to semantic interpretation; the surface structure, all information relevant to phonetic interpretation" (*13*, 406).

> That sound and meaning are separate, and so need relating, is evident from paraphrase, where the same meaning is expressed in different patterns of sound [the child caught the ball and the ball was caught by the child] and from ambiguity, where the same pattern of sound has different meanings. . . . [The sentence *Flattering women amused him* may have two quite different underlying meanings: either *it amused him to flatter women* or *he was amused by women who were flattering*.] Between sound and meaning stands syntax (*42*).

The transformational grammar proposed by Chomsky (*12*) was designed to formulate rules that tie together deep and surface structures, specifying how the underlying meaning is transformed into sounds (surface structure). It "attempts to characterize in an explicit way the intrinsic association of phonetic form and semantic content in a particular language" (*13*, 407).

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INNATE THEORY. There are some psycholinguists, such as Chomsky and his associates, who have put forth the theory that *the human nervous system contains a mental structure that has an "innate" concept of human language* (Chomsky 1967). The theory has not been fully elaborated. For example, how this "mental structure" finds a common syntactic ground among the scores of human languages is not explained. Nonetheless, its espousal of an abstract method of learning—rather than one based on sensory perception—indicates that the theory may be the right kind of theory to answer the question of the origin of language structure.

Evidence for the existence of some kind of mental structure that is responsible for the acquisition of language comes from three generally acknowledged facts about language. First, considering the enormous number of errors it is possible to make in learning a language, the errors that children do make are relatively limited. Second, all children proceed through the same stages of language acquisition, despite great differences in their vocabularies or native language. And third, it is known that there are specific areas of the brain that control the ability to speak and understand language.

As the principles of learning do not seem to be adequate to explain the acquisition of grammar, some psycholinguists (such as Chomsky and his collaborators) suggest that perhaps the human organism's nervous system is "programmed" or "wired" in such a way that there is, in effect, a mental structure with an "innate conception of 'human language' that makes language acquisition possible" (*13*, 401). A model is proposed in which a hypothesized language acquisition device (LAD)—a fiction or model; *not* a device, specific organ, or part of the brain—receives as input all the language heard by the child. Many of the utterances received are grammatically correct, many are not.

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> Given such a corpus, LAD is so constructed that it can develop a theory of the regularities that underlie the speech to which it has been exposed. It can exclude the non-grammaticality in the corpus by constructing a theory about the regularities it contains. This theory is LAD's grammatical competence, its knowledge of the language behind the corpus. Having developed such a grammatical theory, LAD becomes able to go far beyond the corpus with which it began. LAD can distinguish the infinitely many grammatical sentences in its language from the infinitely many non-grammatical alternatives, and it can judge how far from full grammaticality each of the latter deviates (*42*).

Here is a diagram of the model:

Linguistic data ⟶ [LAD] ⟶ Grammatical competence

Of course, LAD

> must be universally applicable. For LAD must be able to acquire any language; it cannot be biased toward some languages and away from others for reasons of internal structure. Thus LAD may contain information and procedures bearing on the general form of language, but presumably contains nothing bearing on the form of any particular language (*42*).

A number of fascinating, though indirect, kinds of supportive evidence are cited by proponents of this theory of syntactic acquisition. For example, considering the almost infinite number of possible grammatical errors and overgeneralizations children could make when they are learning to speak, it is truly amazing that only a small number actually occur. This argues, they maintain, for a built-in mechanism of some sort that limits the range of grammatical structures. Secondly, it seems that all children go through the same stages of grammatical acquisition, regardless of the particular language they are exposed to. A third type of evidence cited is neurological: There are special structures in the human brain that control language functions. While these facts are consistent with the hypothesis of some language processing mechanism, it would be exceedingly difficult to make empirical tests of a hypothesis about a structure with an "innate conception of human language."

It must therefore be concluded that at present there is no satisfactory explanation for the phenomenally rapid acquisition of grammatical structure. The traditional accounts, phrased in learning theory terms, are admittedly inadequate. On the other hand, there is no alternative explanatory hypothesis that is supported by substantial direct scientific evidence.

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The grammars composed from the children's speech were quite simple. They contained two kinds of words: *pivot words* and *X-words*. Pivot words usually occupy a particular place—either first or second—in the toddler sentence and are used with many different words. In the sentences "Papa go," "Daddy go," and "Baby go," the pivot word is "go." Pivot words also can be adjectives, yielding expressions such as, "Pretty doggy," "Pretty car," "Pretty baby." Pronouns, too, may occur as pivot words—"Hit it," "See it," "Throw it." Most of a toddler's two-word sentences contain a pivot word that may be used similarly in scores of combinations. The X-words, or other words, which are numerically the bulk of the toddler vocabulary, are not all-purpose words like the pivot words, nor are they fixed in a particular position in the toddler sentence as the pivot words are. The number of X-words is almost unlimited—*horse, bike, turtle, car, balloon,* and so on. Using his pivot words as a base, the toddler can readily add X-words to his vocabulary and form such sentences as, "See horse!" "See turtle!" or "See balloon!"

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These early sentences contain some typical structural properties—that is, systematic regularities of word order. Even at this age, the child seems to have his own grammar, his own set of rules for forming sentences. The grammar is of course a relatively simple one, and, according to Braine, consists of two classes of words: *pivots* (or *operators*) and X-words. Consider a few of Gregory's first two-word combinations. His third word combination was "see hat," and the next three were "see sock," "see horsie," and "see boy." Ten of his first 13 two-word combinations contain the word "see" in the first position. "In the development of Gregory's language, it appears that from time to time a particular word is singled out, placed in a certain position, and combined with a number of other words in turn, often in quick succession. The words that are singled out in this way are the pivots" (6, 10). The pivots, then, are a few words that tend to occur in a number of word combinations and are associated with a particular position, initial or final. They do not ordinarily occur alone. The X-class is a large open one consisting of the child's entire vocabulary except for some of the pivots. "X-words tend to recur in relatively few combinations and do not appear to be tied to a particular utterance position; they occur alone or in the position complementary to that of the pivot word" (6, 8).

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Table 7.2 summarizes 89 word combinations uttered by Gregory during the first 4 months that he used two-word combinations.

10. Brown & Bellugi, 1964

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Social-Class Differences

Nearly all studies of language development in home-reared children, from infancy studies of vocalization onward, consistently find that children from lower-class homes score lower on tests of language development than do children from middle-class homes. You will recall that in Chapter 6 we found that infants from lower-class homes tend to vocalize significantly less than those from middle-class homes. This disadvantage continues to plague the lower-class child. Comparative studies covering articulation, sentence structure, vocabulary, and sound discernment have shown that lower-class children from 1 to 5 years of age perform less well in each respect than middle- and upper-class children (Templin 1957).

Social Class, Language Development, and Cognitive Functioning. The most striking—and from several points of view, most significant—finding about language development concerns social-class differences, which are evident in almost all studies of language development from infancy onward. It will be recalled that infants from working-class families vocalize less than those from middle-class homes. Recent studies show that from age 1 through age 5, middle- and upper-class children are superior to those of the lower class in all aspects of language behavior: vocabulary scores, sentence structure, sound discrimination, and articulation (58). These well-documented differences seem to be largely attributable to the contrast between middle- and lower-class homes in quality of verbal stimulation.

58. Templin, 1957

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LOWER-CLASS SPEECH: TERSE, CLEAR, CAUTIONARY. Evidence of this lack of verbal stimulation was presented in a British class study (Bernstein 1967). The study illuminated a qualitative difference in the language of the two classes. It was found that the lower-class mother usually speaks to her child mainly when she wants to refer to objects and actions—"Don't step in the puddle!" "Don't run." "Be quiet." Characteristically, the sentences are terse, syntactically simple, and clear. Seldom is a lower-class child encouraged to express his feelings or his acute perceptions. Rather than pushing out barriers in life, lower-class speech seems to work at erecting more barriers; much of the speech is cautionary or otherwise more aggressively negative than positive. Some experimenters have concluded that because the concepts are rudimentary, the distinctions are few, and the chief attractions are specific, concrete, and immediate, the speech of the lower classes shows little indication of reasoning. Authority, they say, is substituted for winning arguments or cogent explanations.

Middle-class speech contrasts sharply. It is more elaborate, more shaped by the individual who is speaking it, more closely tailored to specific situations or people, and more precise than lower-class speech. Middle-class language is in itself more complex, and it carries a greater variety of complex communications, as well as emotional and intellectual information that is better articulated, according to this argument.

The study pointed out that the lower-class parent–child conversation often seems to be designed more to "keep the children in their place" than to communicate with them. A 3-year-old boy is crossing a busy street with his father:

Father: Take my hand.
Son: Why?
Father: Just take it or you'll get hit.
Son: By what?
Father: By me if you don't take my hand.

The same scene with a middle-class father and son might go more like this:

Father: Take my hand now, Billy.
Son: Why, Daddy?
Father: So you don't run in front of a car and get hit by it. Take my hand.
Son: I don't want to. I want to cross by myself.
Father: Billy, you're not old enough to cross by yourself. You've got to watch for cars.

The two exchanges are clearly different in tone. But the content, too, is very different. The middle-class father is not trying to force blind obedience as is the lower-class father. Instead of flat insistence, he offers responses and logical reasons for what he is asking, providing a good cognitive model for the son. In addition, the middle-class father encourages the child to ask future questions by answering his immediate ones. In a sense, too, he encourages the boy by speaking to him on what appears to the child to be an adult level; the child appreciates being talked to as a "big boy."

The most relevant research dealing directly with social-class differences in language training is that of the English educational sociologist Basil Bernstein, of the University of London. His findings were based on British subjects but they would seem to be valid for American lower- and middle-class families as well. Bernstein's systematic observations highlight the sharp contrasts between what he has labeled the *restricted* language of the lower class and the *elaborated* codes or messages of the middle class. In dealing with her child, the lower-class mother uses language primarily to denote things and actions. Sentences are short and simple, grammatically uncomplicated, and easily understood. There is little pressure on the child to verbalize his unique or personal experiences. Lower-class language "focuses on the inhibiting function of speech" (3, 97). Only low levels of conceptualization and differentiation are involved, and attention is directed toward "the concrete here and now—toward the direct, immediate, the descriptive, the global" (3, 97). In this kind of speech there is little evidence of reasoning; conclusions and authoritarian commands are simply stated.

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In contrast:

> Inherent in the middle-class linguistic relationship is a pressure to verbalise feeling in a relatively individual manner and this process is guided by a speech model which regularly and consistently makes available to the child the formal means whereby this process is facilitated.
>
> It can be said that for the middle-class child there is a progressive development towards verbalising and making explicit, subjective intent, whilst that is *not* the case for the working-class child (3, 93).

Elaborated language, typical of the middle class, is more individualized, specific to a particular situation or person, more differentiated, and more precise than the language of the lower class. A wider, more complex range of thought is communicated, and cognitive and affective contents are differentiated and expressed. Restricted codes are highly stereotyped and limited, lacking in specificity and in the exactness needed for precise conceptualization and differentiation.

Bernstein presents a pointed illustration of the social class contrasts in language by citing two hypothetical mother-child conversations on a bus. In each case, the mother has a child on her lap. The first mother is lower class; the second, middle class.

MOTHER: Hold on tight.
CHILD: Why?
MOTHER: Hold on tight.
CHILD: Why?
MOTHER: You'll fall.
CHILD: Why?
MOTHER: I told you to hold on tight, didn't I?

MOTHER: Hold on tightly, darling.
CHILD: Why?
MOTHER: If you don't you will be thrown forward and you'll fall.
CHILD: Why?
MOTHER: because if the bus suddenly stops you'll jerk forward on to the seat in front.
CHILD: Why?
MOTHER: Now darling, hold on tightly and don't make such a fuss (3, 97).

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Even casual analysis of these two conversations reveals a striking contrast between the two mothers in number of words used and in the complexity of language structure. In addition, there are some other impressive differences—in the nature of the mother-child relationship and in factors closely related to cognitive functioning, that is, in encouragement of curiosity and questions, and in the models of thinking and reasoning presented.

> In the first example a whole range of potential learning and connections have been cut out by the categoric statement. The natural curiosity of the child has been blunted. There is no causal chain between the mother's request and the child's expected response. The change in the behaviour has been brought about by a process akin to verbal conditioning rather than through instrumental learning. If the child challenges the statement then in a short period he is challenging the *right* of the mother to issue the request, that is, he is challenging the authority which inheres in the status of the mother. The potential social power in the form of the relation is revealed very quickly.
>
> In the second example the child is exposed to an area of connection and sequence. If this is challenged then another set of reasons are elicited. Of course, after a time the categoric statement is applied but an order of learning has been made available in between. It should be noted that as the result of the linguistically elaborated relationship the initial challenges are of the reasons given to support the request. The challenge of the mother comes much *later* in the relationship and the latent social power is revealed later *and* under different conditions. If the categoric statement is used frequently in a *public* language then it limits learning and curiosity and induces a sensitivity towards a particular type of authority in which social power is quickly and nakedly revealed. The categoric statement becomes part of a language which narrows the range of stimuli to which the child responds (3, 97–98).

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Are Environmental Effects Reversible?

When assertions are made about the effects of early environmental deprivations, a natural response is to ask if such effects can be reversed, if they do indeed exist as deficiencies. The question of reversibility is especially significant today when many social programs have set themselves the goal of helping the poor overcome cognitive and linguistic handicaps in their backgrounds.

To date, reversibility remains an open question. Results of one experiment show that the complexity of speech—as indicated by the number of words per communication—among both lower- and middle-class children increases as they grow older. However, the speech of middle-class children is consistently more complex than the speech of the lower-class children. This difference grows steadily with increasing age (Loban 1965).

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Other studies, however, have given reason for guarded optimism. One such study (Blank and Solomon 1968) demonstrated that the cognitive activities of deprived preschool children could be substantially upgraded through brief, daily periods of individual tutoring. During the experiment's tutoring sessions, which were about 20 minutes long, the main effort was to sharpen the

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child's skill at organizing his thoughts, thinking about situations, understanding events, and structuring his behavior so that he could choose his path of action. These intellectual skills were sharpened through training tasks in which the 22 children—who ranged in age from 3 years and 3 months to 4 years and 7 months—were asked to use and understand language, to respond to stimuli correctly on their own, and to talk about other possible solutions to the task at hand.

The 22 children were divided into four groups, all matched for age, sex, and I.Q. Group A was tutored five times a week, Group B three times, and Groups C and D served as control groups. Control Group C had daily meetings with the teacher but no structured tutoring, while Control Group D had only the usual nursery school program. All of the children were tested before and after the four-month trial period.

Among the children tutored five days a week, the average I.Q. increase was 15 points. Children tutored three days a week gained only 7 points. Control Group C averaged I.Q. gains of 2 points, while Control Group D averaged 1.3. The results seemed to show that the amount of tutoring directly affects the child's score on intelligence tests. In addition to improved intelligence test scores, a number of tutored children displayed sharply different behavior. Children who had spoken in disconnected words and phrases, as well as others who were extremely timid or emotionally affected, overcame these limitations as they became active in the training sessions. The tutored children also seemed to take great pleasure in learning and in their new sense of ability. The experimenter attributed great importance to these later responses—which the untutored children did not display—because the pleasure in learning and the sense of mastery apparently serve as rewards for the child, reinforcing his intellectual activity.

Despite such sanguine results in cases of individual tutoring, other problems, such as the sheer number of children to be tutored and the cost involved, somewhat dim the prospects for the reversibility of the effects of early deprivation. It is a general finding that even when such programs lead to improvement, the improvement is only maintained as long as the program continues. When the training program is over, there is a deterioration towards the original expected levels of response. As social learning theory would indicate, if the reinforcements for new behavior are not maintained, the new behavior will not be maintained. Those who would improve the education of the poor must not just engage in temporary remedial programs but in the long-term reform of education along such remedial lines. Ultimately, environmental effects are not reversible unless whole environments are reversed.

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But what about the child who is raised in a deprived environment and continues to live in this environment beyond the age of 3? Can the so-called compensatory education projects (such as Head Start, sponsored by the United States Office of Education)—designed to raise the educational level of economically and culturally deprived children—help him? Can enriched training programs, applied early, offset cognitive deficiencies? It is impossible to answer these questions definitively at this time, but a few studies suggest that it is possible, although difficult, to achieve such goals.

In our opinion, the available data permit cautious optimism. With great efforts on the part of nursery school teachers and interested parents and welfare workers, and with much special, individual attention, some of the adverse effects of early deprivation can be overcome. This opinion is based on the findings of a number of systematic studies. A few of them will be reviewed briefly here.

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Needless to say, this kind of treatment, requiring a thoroughly individualized training program, is exceedingly difficult, expensive, and time-consuming. It could not be readily used in teaching in public schools with large numbers of children. But the study is important for our purposes because it demonstrates clearly that with concentrated, individualized training, the effects of early deprivation can be overcome.

The results of a fascinating, well-conducted American study recently published (4) indicate that daily, short (15–20 minutes), individual tutoring sessions may produce marked gains in the intellectual functioning of socially disadvantaged preschool children. In the tutoring sessions, designed to generate an "abstract attitude," the child becomes actively involved with the stimuli "so as to comprehend their significance." The training tasks, conducted by a professionally trained nursery school teacher, were focused on improving the child's "ability to organize thoughts, to reflect upon situations, to comprehend the meaning of events, and to structure behavior so as to be able to choose among alternatives" (4, 380).

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To accomplish each training task the child had to understand and use language, to produce relevant responses independently, and to discuss hypothetical situations related to the task (e.g., past, future, and alternative courses of action). "By structuring the teaching time in this way, the teacher made maximum use of every opportunity to aid the child in developing his budding ability to think and to reflect" (4, 382).

The 22 children in the study, ranging in ages from 3 years 3 months to 4 years 7 months, were divided into four groups, matched as closely as possible for IQ, age, and sex. One group was tutored five times a week, and another group received the same training three times a week. There were two control groups: one of them had daily individual sessions with the teacher, but no tutoring, and the other experienced only the regular nursery school program. The study lasted 4 months and all subjects were tested before and after the training period.

The average IQ gains for the group that had 5 days of tutoring a week was 15, and for the group that had three days of tutoring per week, 7. The two control groups averaged gains of only 2.0 and 1.3 points. Thus, improvement in intelligence test performance appears to be correlated with the amount of tutoring per week. Some of the children in the tutored groups manifested other dramatic changes in behavior. Several children who were originally excessively withdrawn, spoke incoherently, and manifested symptoms of emotional upset began to speak clearly and coherently, and their symptoms diminished.

> The most striking gains in the program were the apparent joy in learning and the feeling of mastery which the children displayed as the tutoring progressed. The untutored children, even those who received individual attention, showed none of these attitudes. This result is extremely important in that it strongly suggests that exposure to materials, a school-like situation, and an interested adult is not sufficient for learning. Both mastery and enthusiasm for learning will come only when the child can be shown how to become actively involved in the learning process (4, 388).

But can these effects, achieved in individual tutoring, also be accomplished by group procedures, by techniques that can be applied to large numbers (totaling hundreds of thousands) of children? Again, there is some evidence that this is possible.

4. Blank & Solomon, 1968

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Conditions for Identification

In order for a child to identify with another person, that person must meet two requirements. First, the person must have some trait the child finds desirable. This trait – the power or skill of an adult, for example – according to most psychologists, is the initial motivation for the child to select that particular person as a model. Next, the child must detect some kind of emotional or physical similarity between himself and the other person. Since he is most often in the company of his parents, the toddler usually looks to them as models. The average child finds his mother and father admirable as the dispensers of warmth and love, and the possessors of skills and such mysterious commodities as money, which can bring the child the gumballs and ice cream cones he craves. Not only does the child recognize that his parents have these powers; he also understands that he himself does not. But he wants them. He especially desires the characteristics of a parent whom he personally finds positive and satisfying (Bandura and Huston 1961).

An important question here is how the child links his desire for a parent's specific traits – the parent's power or competence – to the act of imitating the parent's behavior. Presumably, the child believes that by imitating his parent, he acquires the parent's traits. For example, the boy who walks with his father's gait expects thereby to acquire his father's competence in driving a car and other adult skills. Thus, for the toddler, identification means not simply mimicking a person's behavior, but, in a sense, *becoming* that person. Because the child associates the nurturant parent with his own affirmative feelings, he is strongly rewarded and thereby prompted to sustain his identification with that parent. Therefore, for example, a boy who has a generous and demonstrative father is more likely to identify with his father than is the boy whose father is abrupt, cold, and aloof (Bandura and Huston 1961).

The Development of Identification

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Most behavioral scientists—whether or not they are strongly influenced by psychoanalytic theory—regard identification as a basic process in the socialization of the child. Unfortunately, scientific understanding of the development of identification is far from complete, although there are various theories and speculations and some relevant empirical evidence, as we shall see in the following section.

Two conditions appear to facilitate the development of identification with a model. First, the child must be *motivated* to identify with the model —that is, he must want to possess some of the model's attributes. Second, he must have some basis for believing that he and the model are similar in some ways, that they share some physical or psychological attribute.

The Positive Attributes of the Parents as Models

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Most children feel that their parents have numerous desirable characteristics, skills, and privileges. They give and receive love, are strong and have power, and they possess areas of competence the child would like to have. These are characteristics and goals the child wants to possess and areas of pleasure, power, and mastery he would like to control. The discrepancy between his perception of adults and his perception of his own lack of power and mastery act as an impetus for attempting to acquire the parents' attributes.

There are of course many desirable goal states that parents control. Three important ones are: (1) power over the child and other people; (2) mastery of the environment; and (3) love. The desire to possess these goals fosters an identification with the parents.

The child seems to assume that if he possessed some of the characteristics of the model, that is, if he were similar to the model, he would also possess the model's desirable psychological characteristics and command the model's resources: power, affection from others, skills, and competence; he would vicariously enjoy the emotions enjoyed by the model.

The process of identification will be facilitated if the model is a highly desirable and attractive person. A nurturant parent is more likely to be taken as a model than a rejecting one. The nurturant parent gratifies the child's needs and comes to stand for pleasure. In short, his actions, behaviors, and personal characteristics acquire positive reward value. Therefore, the child's imitations of his actions may, according to some psychologists, also be a source of reward. That is, by reproducing (i.e., imitating) some of the parent's behavior himself, the child experiences the acquired positive reward value associated with the parent. For example, a 3-year-old girl may care for her doll in the same way her mother cared for her. The motive for this behavior may be the desire to reproduce the positive acts of the mother that have acquired reward value. As the child imitates the mother's behavior and characteristics, she believes that she experiences the feelings and emotions—the warmth, happiness, and pride—that the mother experiences in caring for her. At the same time as she acts "as though she were the mother," she feels that she actually possesses the power, skills, and pleasures of the mother. If the mother is highly rejecting, her behaviors will not have positive reward value and the child will not be motivated to practice them. When parents are warm and accepting, the child views their behavior as rewarding and, consequently, will want to be like them and act as they do.

Perception of Similarity to the Parents

It is now necessary to make a crucial assumption that links the child's desire for these prized goals with his adoption of parental behaviors. The assumption states that in the mind of the child similarity to the parent or model implies possession of the parent's (or model's) traits and privileges.

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The ideal situation for identification exists when both parents are nurturant and affirmative toward the child. This toddler, rather than being

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puzzled as to which parent to identify with, will eventually select the one with whom he shares more characteristics. This selection of appropriate models can take varying lengths of time. Occasionally, in the case of male children, delayed identification with the father may cause the child, in our culture, to be teased and called a "Mommy's boy" by the father or an older male sibling. The great majority of children, however, spontaneously begin to identify more strongly with the parent of the same sex when they clearly see traits similar to their own (Kohlberg 1966). This is not to say that identification strictly follows sexual lines. A child does not suddenly begin identifying with one parent to the exclusion of the other. On the contrary, a boy, although he is thoroughly masculine and identifies strongly with his father, also may retain a substantial identification with his mother. For example, a burly fullback who mashes his opponents on the gridiron may raise African violets for enjoyment as his mother did. Similarly, a young woman who clearly feels a strong identification with her mother may take greater pleasure in working with a hammer and saw than in knitting or cooking.

In this rather abstract analysis of the process of identification, we need to be reminded of Heinz Werner's point that in the beginning the child does not clearly distinguish between himself and the other person. The relationship between himself and another is undifferentiated. It is out of this lack of separateness that identification is gradually delineated.

It follows, therefore, that identification depends on the child's increasing internal cognitive organization as well as on the adult's attractiveness and similarity. The child's perceptions must be sufficiently organized so that he will have begun separating himself from other people and objects in the world. Therefore, which adults the child identifies with depends on his own self-concept. He assimilates other models into his own behavior in terms of how he himself is constituted.

A Continuing Process

Identification is a continuing process. Toddlers notice and frequently comment on the things they have in common with their parent models. The girl notices that her dime-store ring is "just like Mommy's" or that her dress or raincoat resembles her mother's. The boy observes that he now has trouser cuffs or sneakers or a haircut similar to his father's. The sense of identity with his parent is further strengthened when others tell him that he resembles that parent. Elders, for example, may remark, "You're just like your daddy," or "You're the image of your mother." As the child grows and develops, these points of identity become deeply embedded in his personality; that is, the child retains the sense of identity with the parent while letting fall by the wayside the hairdo or sneakers that earlier provided the identification. Gradually, the child's imitative behaviors become so much a part of his personality that they are involuntary and reflexive. Over the years, the child continues to identify, picking up parental attitudes, fears, and mannerisms that range from ways of speaking and walking to ways of drinking from a cup.

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There are two major ways in which the child may come to feel similar to the model: through adoption of the model's attributes, behavior, and gestures; and as a result of communication with others who tell the child he is similar to the model.

Thus the child imitates parental behaviors in order to increase the basis of similarity between himself and the parents and to possess vicariously the parents' traits. In so doing, his identification is strengthened. When a 5-year-old boy tries to mow the lawn "like daddy" he may be attempting to make himself similar to his father. The child behaves as though he believed that if he were similar to his father in this respect he would possess some of the father's desirable characteristics—strength, competence, and power over the environment. The child behaves as though the more numerous the bases of similarity between himself and the model, the greater the likelihood that he will possess the model's desirable attributes.

Each time the child perceives some similarity with the model, the identification with the model is strengthened. The crucial events in the development of identification are perceptions of similarity with the model. These perceptions may be derived from the child's own observations, or through communications from others who tell the child that he and the model possess similar attributes. These experiences occur regularly in the child's day. For example, a little girl notices that she and her mother wear the same kind of dress or cut their hair similarly. The fact that a girl and her mother have the same family name makes her feel more similar to her mother than to mothers with different family names. The child may be told by its grandmother or neighbor, "Mary, you're just like your mother" or "Bob, you have a memory just like your father." These are just a few of the countless ways in which a child perceives similarities between himself and a parent. These experiences aid the development of the identification.

When both parents are perceived as nurturant, powerful, and competent, the child will identify to some extent with both of them. Typically, however, the child will perceive greater similarity to the parent of the same sex, rather than to the one of the opposite sex, and will therefore identify more strongly with the former.

To summarize briefly: initially, the child becomes aware of the discrepancies between his perceptions of his parents' power, privileges, and desirable characteristics and his perceptions of himself. He begins to behave as though he believes that if he were similar to the parents he would share vicariously in their emotions and possess some of their envied qualities. He may therefore imitate and adopt parental actions in order to increase the similarity between himself and the model. This process is aided by others telling the child that he is similar to the parent, and by the child's own perception of his similarity to that parent in clothing, anatomy, personality, name, or even type of haircut.

As the child's identification becomes stronger, he begins to behave as though he does indeed possess some of the model's characteristics. The behaviors that he imitated earlier become automatic and are more firmly entrenched aspects of his character and personality.

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Finally, it should be emphasized that identification is not an all-or-none phenomenon. Each child identifies, to some degree, with both parents, and as his social contacts become wider, with adults and peers outside the family.

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In another study of dependency and reinforcement, mothers who initially punished a child for being dependent, but finally gratified him, produced the most dependent children (Sears, Maccoby, and Levin 1957). For example, a boy may approach his busy mother and ask her to tie his shoe. She reacts with irritation ("You're old enough to tie your own shoe," or "Don't bother me now!"), but she finally relents and ties the shoe. According to the study, this child is torn by conflict whenever he feels he has to call on his mother. Because of his experience with her, he expects his need will be satisfied. However, he also knows that his mother first will be angry with him, and this knowledge gives rise to anxiety. So his dependent gestures have the dual effect of making him anticipatory of gratification and at the same time anxious, thus increasing his general state of arousal.

SEX DIFFERENCES. The sex of the child, as we have seen in earlier chapters, tends to cause a mother to interact in certain ways with her child; for instance, a mother usually will vocalize more with a female infant. Other early differences in maternal treatment, based on the child's sex, may also have certain influences on the child's degree of dependence on her. Reflecting general cultural values, a mother may encourage, or at least tolerate, more independent behavior in a male child while discouraging similar activity in a female child. Or on the other hand, dependency behavior in boys is usually frowned upon but is actively rewarded in girls. As a result, greater dependency among girls has been widely observed. Nursery school teachers, for example, report that girls exhibit much more dependency behavior than boys do in the toddler and later preschool years (Emmerich 1966). Similarly, an experiment showed that in play situations, girls between 3 and 8 years approached adults for help more often than boys did (Crandall and Rabson 1960). Studies also have demonstrated that from age 3 to 14, dependency behavior is more stable in girls than in boys (Kagan and Moss 1960, 1962). Thus, a girl who is dependent as a 4-year-old toddler probably will remain dependent into puberty. Predicting a boy's dependency in childhood and at the same stage of adolescence is not so easy. The girl's more stable dependency seems to be prompted by our society's casting of the female in a generally dependent role. Similarly, the boy's less extended dependency period, or rather more inconsistent display of dependency, seems due to his opposite sex-determined role—the discouragement of his dependency by parents and peers as well as the encouragement that he be an independent male.

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Among the mothers of kindergarten children interviewed in the Sears, Maccoby, and Levin study (70), those who punished dependency but ultimately gave the child the attention or help he was demanding had the most dependent children.

Reward for dependency had a tendency to increase dependency only when it was superimposed on punishment for the same behavior.

The situation in which the mother sometimes loses her temper over the child's dependency and sometimes responds sweetly and nurturantly, or in which she becomes irritated but nevertheless turns her attention to the child and gives him what he wants, is one ideally calculated to produce conflict in the child. On the one hand, he anticipates unpleasant consequences to his behavior, and this anticipation produces anxiety. On the other hand, he simultaneously anticipates reward. When he has an impulse to be dependent, the impulse makes him both anxious and hopeful; the fear of the mother's irritation may make him inhibit his impulse temporarily, but the hope of getting the mother's attention through dependent behavior is still there. If eventually the dependent behavior does show itself, it will be of an "overdetermined" sort—exceptionally intense, doubly irritating to the mother, and impossible to ignore. Thus the mother's double response of giving the desired attention in the midst of irritation is made more probable and a vicious circle is established (70, 173–174).

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Relation of Dependency to Other Aspects of Socialization. During early childhood, manifestations of dependency (and, presumably, dependent motivation) are more frequent and more intense among girls than among boys. Nursery school teachers consistently rate girls higher than boys in dependency throughout the nursery school years (19). In free-play settings, girls 3 to 8 years of age show more dependent overtures to adults than boys do (16). Moreover, in contrast to aggression, dependent behavior is more stable for girls than for boys from the age of 3 to the age of 14 (47, 48). For example, a dependent 5-year-old girl is apt to become a dependent adolescent and young adult, but it is more difficult to predict adolescent dependency for boys from their preschool behavior. Perhaps this is because girls have less intense anxiety over expressing dependency, an accepted component of traditional feminine behavior, while conflict over violating sex-role standards for dependency may lead to inhibition of this type of behavior among boys.

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19. Emmerick, 1966
16. Crandall & Robson, 1960
47. Kagan & Moss, 1960
48. Kagan & Moss, 1962
70. Sears, Maccoby, Levin, 1957

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Dependence and Learning

Parents often exploit the dependency feelings of their toddlers when they want the children to learn a behavior of some kind. Understandably, the more dependent a child is, the more eager he will be to comply with their wishes. In a study of learning by means of dependency motivation, a female researcher provided constant comfort and assistance to one group of preschool children. A second group received similar attention for a while and then the researcher left them—an action expected to increase the child's desire for companionship and aid. At this point, all the children were presented with a simple task, the performance of which elicited praise from the researcher. The second group, which had been deprived of its nurturant companion, mastered the task before the first group, apparently because of their stronger motivation to earn the researcher's praise. In general, the investigators found that children who were very dependent worked more industriously at the trial task than children who had a fair degree of independence (Hartup 1958).

In this same experiment, as in learning through imitation (see Chapter 2), the sex of the researcher proved to be a significant factor in determining how fast a child performed the task. Boys performed best when they had a female nurturant figure who encouraged and rewarded them, and toddler girls responded best to a nurturant male. It may be argued that each sex finds the opposite sex a more arousing stimulus, or simply more rewarding.

Dependency on adults may be useful in "teaching," for children highly dependent on adults appear to be highly motivated to learn when rewarded with adult approval. In one study (29), the nurturance needs of two groups of preschool children were experimentally manipulated. One group was consistently nurtured by a female experimenter who played and talked with each child individually. In the second group, each child was first nurtured, and then the nurturance was suddenly withdrawn. It was assumed that the treatment of the second group would increase the child's motive for nurturance as a consequence of deprivation of a pleasant goal. Finally, each child was asked to learn a simple task and was verbally praised by the experimenter for a good performance. The group that experienced nurturance-withdrawal—and presumably had a stronger need for adult approval and attention—learned the task more rapidly with adult approval than the other group did. Moreover, highly dependent boys were more strongly influenced than relatively independent boys by this treatment. Apparently, the child's need for attention and nurturance was heightened by the experience of nurturance-withdrawal. Consequently, the experimenter's praise, after withdrawal, was a particularly effective reward and led to harder work and faster learning.

Men and women are differentially effective in gratifying boys' and girls' needs for nurturance. Boys performed best in the learning task described above with a woman experimenter who was nurturant at first and then rewarded the performance. Apparently, nurturance from a woman was "worth more" to a preschool boy than nurturance from a man, but nurturance from a man was more effective with preschool girls. This phenomenon may not be true of older children; school-age boys, who regard men as ego ideals, should be more likely to prize the approval and praise of a man more highly than that of a woman.

29. Hartup, 1958

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Development of Conscience

A widely held theory regarding the development of conscience is that conscience arises through the child's identification with his parental models. Thus, a child identifving with a parent will implicitly adopt the parent's behavior standards just as he may adopt the parent's manner of speaking. Incorporation of a parent's moral standards creates one more link that secures the child's identification with his parent. When he has internalized his parent's standards, the child begins to take over as his own moral guide. The newly created conscience becomes the parent *in absentia*. When the child does something that his parents would disapprove of or punish him for, the child now punishes himself—usually by means of the relentless reprimand of a guilty conscience (Whiting and Child 1953).

Conscience Development

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During the preschool years the child begins to show evidence of conscience development—that is, of having a set of standards of acceptable behavior, acting in accordance with these standards, and feeling guilty if he violates them. He has, at least to some extent, adopted his parents' moral values and standards for evaluating his own and others' behavior. Freud regarded the development of conscience—or superego as he labeled it—as a product of identification: "When, by the process of identification he demands from himself conformity to a standard of conduct, the superego is said to be making its appearance" (57, 543).

The child striving to be similar to the parent will absorb parental moral standards, behaviors, and prohibitions in the same way that he adopts other parental behaviors. The adoption of parental standards makes him feel similar to his parents and, therefore, strengthens his identification with them. He then begins to punish himself whenever he has done something for which he believes his parents might punish him (75). According to psychoanalytic theory, this demonstrates that ". . . through identification with the parent, he has taken over and incorporated within himself the attitudes of condemnation of those who transgress" (57, 541).

Conscience is obviously a very broad, pervasive component of the individual's psychological organization. The term subsumes a wide variety of responses, opinions, and judgments: e.g., being honest; obeying rules and regulations; resisting temptations to cheat, lie or steal; acting in kind, considerate, altruistic ways; considering the rights and welfare of others; treating people in egalitarian rather than authoritarian ways; making moral judgments in which justice is tempered with mercy.

75. Whiting & Child, 1953

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Determinants of Aggression

There are several theories regarding the basic determinants of aggression. Each one emphasizes, to varying degrees, the importance of instinctual, constitutional, or social factors. The current popular view—that man's aggression is biologically based, or instinctual—is an outgrowth of conclusions drawn from subhuman animal studies. Such studies of the behavior of animals in their natural surroundings have concluded that in most species, aggression is an innate behavior (Ardrey 1966; Eibl-Eibesfeldt 1961; Lorenz 1966). Lorenz generalized this concept of natural aggression to apply to man as well (Lorenz 1966). He and other ethologists have maintained that particular events or stimuli invariably evoke various instinctive aggressions in the different species of animals. While this may be true of nonhuman animal behavior, it is risky to assume that the pattern applies to human behavior as well. It is known, for instance, that aggressive behavior varies markedly from species to species among animals. It is quite likely, therefore, that significant genetic differences also separate man's aggression from that of other species.

John P. Scott, an American psychologist, has attacked the popularized notion that man's aggression is rooted in his instinct as "a bloodthirsty carnivore":

> Social fighting has most probably been evolved from defensive reactions to injury. Such reactions are almost universal and are adaptive against attacks by predators as well as against accidental injury by members of the same species. Starting at this point, the evolution of social fighting has proceeded independently in different species, with the result that fighting serves a variety of social functions. The most general of these functions is the regulation of social space, but agonistic [fighting] behavior may also regulate the availability of mates, as in deer and sage grouse; the division of food in dogs and wolves but not in mice; and the availability of breeding territories in many species of birds. (Scott 1970)

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Although it is questionable that man's aggressive drives are solely determined by his instinct, the biological constitution of the individual may play a significant role in his aggressive behavior. For example, evidence points out that the males of many animal species are more aggressive than the females. Furthermore, if females receive doses of male hormones they display aggressive behavior which resembles that of the male. In humans, most studies of young children conclude that aggression—and especially overt physical aggression—is more common among boys.

A child's constitution also includes his level of activity, which may vary from phlegmatic to hyperactive. Research has positively correlated activity level to frequency of aggression (Patterson, Littman, and Bricker 1967). Greater activity, it would seem, increases the child's contact with his environment and leads to more occasions when aggressive behavior will occur.

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Frustration and Aggression

It is commonly thought that frustration is the most common antecedent of aggression. The woman who missed an appointment as she waited for her husband, says to her friend: "I was so frustrated I could have killed him." While the woman probably was exaggerating the degree of aggression she felt toward her husband, this is basically the kind of frustration-aggression relationship that has been widely assumed by investigators; that is, frustration followed by aggression. Although there is no commonly accepted definition of frustration, most investigators view as frustrating those experiences or events that inhibit a person's movement toward a goal, undermine his self-regard, or create conflicts between incompatible responses. Apparently, the link between the removal of frustration and the aggressive act (and its frequent by-product, the infliction of pain on another) is learned through repeated trials. Although there is little empirical evidence to support this view, it is likely that the child quickly learns from experience and observation that aggressive acts can eliminate many sources of frustration (Feshbach 1964).

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Biological Factors

Observations of animals in their natural habitats have led some ethologists to postulate that aggressive drives have an innate, biological ("instinctive") basis (*1, 18, 51*). Konrad Lorenz speaks of aggression as a "true, primarily species-preserving instinct" (*51*, 50) in humans as well as in animals. According to him, certain stimuli or configurations of stimuli innately elicit aggressive reactions from animals, the eliciting stimuli and forms of aggression varying from species to species.

While these observations of animals' aggressive behavior suggest the *possibility* that certain stimulus situations may innately evoke aggression from humans, generalizations about innate aggressive drives in humans hardly seem warranted. Moreover, in many subhuman species the patterns of aggression may be significantly modified through experience (*67*). A thorough review of the relevant research led Feshbach to conclude that

> [generalizations] from an animal species to the human species are . . . highly questionable. The animal data may suggest the kinds of physiological mechanisms and situational variables that should be investigated in humans but cannot substitute for direct empirical studies of human aggression. It is also apparent that there are major differences between animal aggression and human aggression. Animal aggression is, on the whole, regulated by immediate stimulus changes. Human aggression can be maintained by mediating cognitive structures and is, to a much smaller degree, stimulus bound (*25*).

While the question of the biological basis of aggressive drives is a debatable one, there is a strong possibility that constitutional factors play a significant role in aggressive behavior. It seems quite likely, for example, that sex differences in aggressive expression have a biological basis. The male young of many animal species (e.g., rats, guinea pigs, monkeys) are much more aggressive than their female siblings. Experimental administration of male hormones to females of these species makes them much more aggressive in their approaches to others—more threatening, more "rough-and-tumble" in their play, and less likely to withdraw from the threats and approaches of other animals.

Furthermore, children's aggression appears to be intimately related to activity level, which is strongly influenced by constitutional makeup (*63*). Active children interact more frequently and more intensely with their peers and become involved in more situations that are likely to elicit aggressive responses. There is, furthermore, a positive correlation between activity level and frequency of initiation of aggressive behavior, and active children are likely to be reinforced by their peers for socially aggressive behavior (see pp. 398–399).

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Frustration and Aggression. According to the popular frustration-aggression hypothesis, aggression is a prepotent, if not inevitable, reaction to frustration. While there is no general agreement on a definition of frustration, most investigators and theorists agree that frustrating events are those which block the individual's goal-seeking behavior, threaten his self-esteem, or deprive him of the opportunity to gratify some salient motive. The sources of frustration may be (1) externally imposed barriers that prevent or delay the achievement of an important goal, or (2) internal conflicts between incompatible responses or (3) feelings of inadequacy or anxiety that inhibit or prevent the pursuit of important goals.

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It is not clear how the aggressive response to frustration is acquired. Sears (*68*) has suggested that the infant finds that aggressive acts are often effective in eliminating frustration (e.g., the infant's thrashing about and hitting when he is being held uncomfortably may bring relief and a more relaxed, comfortable position). At the same time, these aggressive responses may evoke pain in the individual who is the source of frustration. This association between the perception of pain in others and the reduction of frustration is then learned and repeated. Feshbach (*24*) postulated that aggression stems from the child's frequent exposure to behaviors and cultural norms which indicate that injuring others is an appropriate response when the individual is frustrated or in pain—that is, the association between frustration and aggressive behavior is a kind of internalized cultural standard. But, as has been pointed out, both these explanations "are largely speculative, there being little in the way of empirical evidence that directly bears on this issue" (*25*).

+1. Ardey, 1966 : 18 Eibl-Eibesfelot, 1961, 51, Lorenz, 1966.

+(63) Patterson, Littman & Bricker, 1967

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MODEL THEORY OF AGGRESSION. Other views of aggression hold that frustration is not a necessary antecedent to aggression. Some feel that a child's exposure to an aggressive model will, in itself, increase the child's aggressive responses.

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This argument recalls our discussion, in Chapter 2, of learning through imitation of an adult model. There, we reviewed a study in which three groups of preschool children saw three versions of adult aggression. The first saw a live adult abuse an inflated doll. The second saw a film of the same aggression, and the third saw a cartoon character, also on film, abuse the doll. After viewing these portrayals of the same aggression, the experimenters mildly frustrated these three groups, as well as a control group who had not witnessed any aggressive acts in the experiment. They then presented them all with an inflated doll. The children who had observed all three portrayals of aggression attacked the doll much more vigorously than the control group did (Bandura, Ross, and Ross 1963). In addition to the learned aggressive behaviors, children exposed to an aggressive model will perform new acts of aggression which were not previously demonstrated. Thus, the modeled aggression also can be generalized to other aggressive acts.

While a child's exposure to an aggressive model clearly increases his aggressive behavior regardless of earlier frustrations, we are still missing an important element in the aggression pattern – motivation. The children in this experiment beat up the inflated doll because they were "put up to the job." They were not frustrated by the doll, nor did they want to hurt it because of any feelings of revenge or retaliation, which are common motives at this age. The circumstances simply were established in such a way as to take advantage of the child's natural drive to imitate an adult while expressing a mild frustration. Thus, though the model study tells us aggression will be increased when an adult provides a model for the behavior, it does not tell us about the child's internal motivation to commit acts of aggression in unconditioned situations in daily life. The frustration-aggression theory, on the other hand, gives us a sounder basis for understanding the motivation behind aggressive acts.

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Modeling

Exposure to an aggressive model (or models) is likely to elicit imitation of aggression in children. In the stimulating research of Bandura and his associates at Stanford University, the subjects, usually preschool children, are first exposed to aggressive real-life or fantasy (movies or television) models. In one experiment, for example, an adult model was observed by preschool children while she "solved" a discrimination-learning problem (4). During her trials, she made many incidental, irrelevant responses that had nothing to do with the discrimination learning including behaving aggressively toward dolls located on the discrimination boxes. When she was with the control subjects, she did not behave in those aggressive ways.

Subsequently, the subjects were given the same discrimination problem. Ninety percent of the children in the experimental group imitated the aggressive responses of the model, whereas none of the control children displayed such behavior. **The authors point out that these findings demonstrate that mere observation of aggressive models is *sufficient* to stimulate imitative aggressive behavior in children. Frustration is not a *necessary* antecedent condition for the occurrence of aggressive responses.**

Imitative aggressive responses, acquired from a model, as in the experiment described above, may also generalize to other settings. In another experiment, the subjects were 48 nursery school children (24 boys and 24 girls). Some of the subjects observed aggressive models behaving in distinctive aggressive ways toward an inflated balloon painted to resemble a clown; others observed nonaggressive models. A control group of 24 children were not exposed to any adult models in the experimental situation.

Following their exposure to the model, the children experienced a mild frustration before being tested for delayed imitation of the model's behavior. Then they spent 20 minutes in a room playing with a variety of toys. The subjects who had been exposed to aggressive models displayed significantly more imitative physical and verbal aggression than the controls or the children who observed nonaggressive models. Other kinds of aggression, not displayed by the model, were also more common among those who observed an aggressive model. Clearly, exposure to human models behaving aggressively has a great deal of influence in eliciting aggressive behavior regardless of whether it is preceded by frustrating experiences.

The frequency of aggressive acts apparently increases after exposure to aggressive models and as a result of rewards for these responses. But note that these studies tell us nothing about aggressive *motivation* because there is no evidence that the child desired to hurt or injure the dolls.

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Regression in Response to Frustration. A common response to frustration is overt aggression, as we have seen, whether the aggression is physical, such as fighting, or verbal, such as quarreling. Another response that may arise from frustration is *regressive* behavior, in which the child reverts to earlier responses he has since surpassed. One important frustration-regression study recorded this type of response in nursery school children (Barker, Dembo, and Lewin 1943). The investigators recorded the children's behavior in two play situations. The first was a situation in which the children were free to play with a set of toys as they wanted. In the second situation,

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the children were frustrated by being presented with an additional, and even more attractive, toy set, and by then being deprived of the more attractive set after a period of exploration. The more attractive toys were locked behind a screen, out of reach, but plainly visible. The difference in behavior during the two play periods was striking. In the first period of uninhibited play, the children displayed interest and creativity. In the second, frustrating period, their play was substantially less creative and constructive, a sign of regression to earlier behavior. In addition, the children frequently tried to touch and retrieve the screened-off toys, begged to be let out of the room, and behaved aggressively toward both the wire screen and the investigators. It was also noted that the children most severely frustrated—that is, those who most often tried to escape from the room or who most often approached the wire screen—showed the greatest regression in their play. As this last finding indicates, there is a wide range of differences in the degree of frustration that will provoke regressive behavior in individual children.

Frustration Tolerance. The tendency to regress or engage in aggressive acts in the face of frustration is determined by the child's individual level of tolerance for frustration in general. The correlation between frustration tolerance and the tendency to regress has been supported by several studies. In one, a group of preschool children first were given two behavior tests to assess their frustration tolerance (Block and Martin 1955). Then each child was observed separately as he was permitted to play with an attractive toy set and later was thwarted by a wire screen. The results indicated that children shown by the two behavior tests as low in frustration tolerance were the subjects who, when frustrated, displayed the greatest degree of regression to infantile behavior. They did not play constructively with the remaining toys and frequently attacked the wire screen physically. On the other hand, children who tolerated frustration well on the two behavior tests also were able to maintain their constructive play with the toys that were left.

Frustration and Regression. Aggression, though perhaps a prepotent reaction to frustration, is not the only common one. Regression (resorting to immature response patterns) is another frequent immediate consequence. In

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one highly significant investigation, Barker, Dembo, and Lewin (6) observed the behavior of 30 nursery school children under two conditions: first, free-play, and later, frustration. Regression was measured in terms of decreases in productivity, creativity, and constructiveness of play after frustration.

In the free-play situation, the children played alone for half an hour in a room which contained a standard set of play materials arranged on three large squares of paper. Behavior was recorded and units of play were scored on a 7-point scale of constructiveness from 2 (superficial examination of the playthings) to 8 (highly original, elaborate game or story involving the toys).

The frustration situation was divided into three parts. During the first stage, prefrustration, the child was brought into the experimental room, where he found the standard play material of the free-play period incorporated into an elaborate, highly attractive set of new toys. When the child had become thoroughly involved in play with these new toys, the experimenter collected all the less attractive, standard toys. He arranged them, as they had been earlier, on three squares of paper in another part of the room. The child was led to that part of the room, and a wire screen separating the standard toys from the new ones was lowered and locked. This marked the beginning of the second phase of the frustration period. During this time (30 minutes), the child could play only with the less attractive play materials while the more desirable toys remained visible but inaccessible (see Fig. 9.1).

Following the frustration period, the partition was lifted and the child was allowed to play with the new toys for as long as he wished. This final period served no experimental purpose, but was designed to mitigate any undesirable consequences of the frustration.

Children's reactions during the second phase of the frustration period differed greatly from their behavior during free play with the same toys. When frustrated, the children displayed significantly more barrier or escape activities (e.g., physically approaching the inaccessible regions, pleading with the experimenter to be allowed out of the room, talking about outside regions, and aggressive behavior toward experimenter or barriers). In addition, their play was appreciably less creative and constructive than it had been during free play. In other words, a marked reduction in the level of maturity of play was a consequence of frustration. Furthermore, the children who seemed to be most severely frustrated, i.e., those most occupied with barrier and escape behavior during the frustration situation, regressed most in their play.

As is the case with respect to tendencies to become aggressive, there are striking individual differences in "frustration tolerance" which affect children's ability to control regression as a reaction to frustration. In one interesting study (12), the investigators assessed the frustration tolerance of a group of preschool children by means of two behavioral tests. In addition, each child was observed in a separate session in the frustration situation described above in which he was first allowed to play with attractive

toys, and then was prevented by a barrier from playing with them. The children who seemed low in "frustration tolerance" could not adequately control their regressive reactions to frustration. After being frustrated, they were unable to play constructively with the ordinary toys, and often kicked the barrier aggressively, while children who had been able to tolerate frustration on the two tests did not become less constructive in their play with the ordinary toys (12).

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One important study found that reprimands temporarily lowered the aggression that nursery school children exhibited in their doll play (Hollenberg and Sperry 1950). In the first of four play periods, the base-line aggressive behavior was recorded. Next, 12 children were separated as the experimental group, and 11 remained as a control group. In the second session, the 12 experimental subjects were verbally punished, or reprimanded, for every aggressive behavior. The control children had complete freedom to aggress in any way. During the third play session, none of the 23 subjects was punished. Despite this reprieve, the 12 subjects who had been punished earlier displayed substantially less aggressive behavior than they had in the first free-play session. In contrast, the control group progressively increased its aggressive behavior from the first through the fourth play periods. In sum, punished aggressive behavior led to reduced aggression, while unhampered aggression led to more aggressive behavior. We should note, however, that though reprimands inhibited the 12 subjects' aggression in the third play session, by the fourth session they were showing as much aggressive behavior as the

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unpunished control group. Thus, while punishment has an inhibitory effect, the effect does not last long. The reason, incidentally, that verbal and not physical punishment was used in this study (in addition to obvious ethical considerations) is that other evidence has shown that, contrary to popular assumption, physical punishment is not consistently successful in inhibiting aggressive behavior.

The relative success of punishment in quelling aggressive behavior on a short-term basis would seem to indicate a rather direct relationship between punishment and aggression. However, other studies have indicated that the relationship is more complex and depends on the degree of punishment involved. In one, for example, investigators observed the level of aggression among three groups of nursery school children whose mothers had described their own punishments of their children (Sears, Whiting, Nowlis, and Sears 1953). The children in the first group had nonpunitive mothers. Those in the second had mothers who administered mild punishments. In the third group were children who were harshly punished. The results illustrate the complexity of the effects of punishment. The children whose mothers did not punish them displayed few aggressive behaviors; it was assumed this occurred because their permissive mothers rarely thwarted their desires at home, and therefore, the children did not develop pronounced aggressive drives. In contrast, the mildly punished children exhibited the most aggressive behavior. The harshly punished group displayed the fewest aggressions of any of the three groups. The investigators explained their results by noting the effects of various degrees of punishment. Mild punishment merely produces frustration to be expressed in later aggression. When a punishment is harsh, however, it taints the specific punished act and inhibits the child from repeating it. The frustration produced by the harsh punishment will be expressed only in aggressive behavior that is dramatically distinct from the earlier, punished activity (Sears 1961).

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Punishment for Aggression. While reward for aggression, frustration, and observation of aggressive models may stimulate the child's aggressive behavior, punishment for aggression should, according to the principles of learning, lead to inhibition of overt aggression. There is good experimental evidence to support this expectancy. In one study, the investigators recorded and rated all instances of aggression exhibited by 23 nursery school children during four doll-play sessions. During the second session, 12 children, the experimental group, were punished verbally (e.g., "No, John, don't you know nice boys don't do things like that?") every time they made an aggressive response. The control group, 11 children, were allowed complete freedom to express aggressive behavior without punishment.

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None of the subjects was punished during the third session. Nevertheless, the experimental subjects who had been punished during the second session manifested significantly fewer and less intense aggressive responses than they had in the first, or "baseline," session. The control group, on the other hand, increased steadily in both frequency and intensity of doll-play aggression from the first to the fourth sessions. In short, punishment for aggression led to inhibition of aggression while permissiveness reduced anticipation of punishment and weakened inhibitions against aggressive expression (40).

These findings should be applicable to the home situation. If aggression is punished there, fear and anxiety become attached to hostile responses and the child learns to *inhibit* such responses at home and, by generalization, in situations resembling the home.

The effects of parental punishment on children's aggressive behavior appear to be more complex than this, however. Sears and his coworkers observed the aggressive responses of three groups of nursery school children in free-play situations. The first group had nonpunitive mothers; the second group, mildly punitive mothers; and the third group, severely punitive mothers. The mildly punished children manifested the greatest number of aggressive responses. The first group had relatively few aggressive responses, presumably because they were seldom frustrated at home and consequently did not have strong aggressive *drives*. The third group, having experienced severe punishment for aggression, inhibited their aggressive *responses* (71).

The investigators' interpretation of their findings is that:

> punishment serves as a form of frustration and hence increases the total instigation to aggression, but when punishment becomes sufficiently severe, it inhibits the specific actions punished; in such cases, the increased aggressive instigation would be manifested only in forms of aggressive activity different enough from those punished not to suffer from inhibition by means of stimulus or response generalization (69, 475).

40. Hollenberg & Sperry, 1950
69. Sears, 1961
71. Sears, Whiting, Nowlis, & Sears, 1953

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Displacement of aggression. When aggressive behaviors are expunged by harsh punishment, the frustration prompting those behaviors remains latent in the child. As suggested above, however, aggressive responses to such frustration may be *displaced* and emerge in other conditions entirely different from the situation in which the initial aggression was harshly punished. Thus, a boy's frustration, heartily punished when expressed as aggression toward a younger sister, may emerge the next day as a swift kick at his dog.

A study of 30 nursery school children showed how the degree of punishment and frustration experienced in the home relates to the amount of aggression expressed in their play with dolls (Sears, Maccoby, and Levin 1957). The subjects' mothers were thoroughly queried about their rules at home, their reactions to the child's needs or desires, and their insistence on their own demands. The mothers' responses furnished data on the amount of frustration the child experienced in his home. Their reported disciplining practices—spankings, threats of punishments and reprimands—provided ratings on home punishment of aggression. Results showed that children from homes in which either frustration or punishment was common exhibited displaced aggression more often and more strongly than children whose homes had low frustration or punishment ratings.

REWARD. While punishment tends to have a short-term inhibiting effect on specific acts of aggression, rewards for such behavior have been shown to have an overall reinforcing effect which increases the child's aggressiveness. Being rewarded for aggression prompts the child to generalize or extend his aggressive behavior into other situations. In one experiment, preschool children were rewarded when they reviled the dolls they were playing with as "bad" or made aggressive remarks such as, "Doll should be spanked" (Bandura and Walters 1963). A control group was rewarded for verbal responses that were not aggressive. The children rewarded for aggressive speech used such speech more frequently than the control children. After this was noted, all of the children played with other toys in another room. In this new situation the children who had been rewarded for aggressive speech were notably more aggressive than the control children, and at this point their verbal aggression had generalized to nonverbal aggression as well.

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Displacement. If aggressive *motives* are of considerable strength—perhaps as a result of severe frustration at home—they will not necessarily be eliminated, even if aggressive *responses* are punished. Under these circumstances aggression may be *displaced*, that is, expressed in situations that are quite different from the home (e.g., in permissive doll play).

Specific predictions about the expression and displacement of aggression, derived from these theoretical considerations, were tested in a study of the effects of *home punishment and frustration* on children's doll-play aggression. The mothers of the 30 nursery school subjects were intensively interviewed about restrictive rules, responsiveness to the child's needs or requests, and enforcement of compliance with mother's wishes. Measures of *home frustration* were derived from the mothers' responses, and *punishment of aggression* in the home was also rated on the basis of mothers' statements about the frequency and intensity of spanking, threatening, and scolding.

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As would be predicted on the basis of theory, highly frustrated children (those above the median in *home frustration)* were more aggressive in permissive doll play than mildly frustrated children were. Moreover, highly punished children (above the median in *home punishment*) exhibited more doll-play (i.e., displaced) aggression than those who were mildly punished. Homes rated high in both frustration and punishment produced children who manifested considerably more frequent and more intense expressions of displaced aggression than children from homes rated low in both these variables.

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The Effects of Rewards. Rewards for aggressive behavior lead to creases in overt expression of aggression and generalization of aggressive responses to other situations. In one straightforward experimental study, 7 preschool children received trinkets as rewards for verbal aggression while playing with dolls (calling the dolls "dirty," "bad"), while 7 other subjects, the control group, were rewarded for nonaggressive verbal responses. Following this training period, all subjects were then observed in another play situation with other toys. During the training session, the children who were rewarded for verbal aggression made significantly more of these responses than did the controls, and, in the subsequent play period, they also manifested significantly greater amounts of *nonverbal* aggression. "The importance of this study lies in its demonstration that reinforcement of verbal aggression in one play setting has effects that are manifested in nonverbal aggression in a different play setting" (5, 384).

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5. Bandura & Walters, 1963

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Inconsistent treatment. Aggression also can be spurred by the parents' inconsistent treatment of a child's aggressive acts. An unpredictable pattern of punishment and permissiveness has been found to produce extremely aggressive children (Sears, Maccoby, and Levin 1957). The reason for this effect is not completely clear. It seems likely, however, that when a parent overlooks a previously punished behavior, the child's fear of future punishment for the same act diminishes. Then, too, inconsistent treatment produces additional frustration, which provides fuel for later aggression.

Sex Differences. Aggression patterns vary significantly according to the sex of the child. One study reported that both boys and girls of 2 years display physically aggressive behavior, such as kicking and screaming. At 4 years of age, however, boys scream less and hit more than girls do (Hollenberg and Sperry 1950). Such sex differences in aggressive behavior become more marked and regular as the child grows older and learns the acts that are considered appropriate to his role. Another study confirmed the common knowledge that, at least during their preschool years, boys continue to be more aggressive than girls. Boys' play and fantasy contain more aggression, and they indulge in decidedly more fights, destruction, bickering, assaults—verbal and physical—and more negative responses (Maccoby 1966). Such differences appear to reflect the socialization processes that usually begin at about age 2. Aggression in boys in Western societies generally is condoned and even encouraged. In girls, aggression is regarded as an undesirable trait and is, therefore, more stringently inhibited, both by parents and peers.

Inconsistent handling of the child's aggression may also stimulate aggressive expression. Mothers who permit aggression on some occasions and punish it at other times are likely to have highly aggressive children (70). When parents permit occasional aggression, the child probably experiences some reduction in anxiety about this response. In addition, inconsistency in discipline creates a frustrating situation which instigates aggressive behavior. Probably

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> the way for parents to produce a non-aggressive child is to make abundantly clear that aggression is frowned upon, and to stop aggression when it occurs, but to avoid punishing the child for aggression. . . . When the parents punish—particularly when they employ physical punishment—they are providing a living example of the use of aggression at the very moment they are trying to teach the child not to be aggressive. The child who copies his parents in many ways, is likely to learn as much from this experience of successful aggression on his parents' part as he is from the pain of punishment. Thus, the most peaceful home is one in which the mother believes aggression is not desirable and under those circumstances is never to be expressed toward her, but relies mainly on non-punitive forms of control. The home where children show angry, aggressive outbursts frequently are likely to be homes in which the mother has a relatively tolerant (or careless) attitude toward such behavior, or where she administers severe punishment for it, or both (70, 266).

Sex and Age Differences in Aggression

The form, style, frequency, and intensity of the child's aggressive responses seem to be, to a very great extent, functions of his social learning experiences. "In the area of aggression, social training consists largely in teaching a child to be aggressive only *in certain ways*. For example, he may be taught to 'defend his principles' (or his parents) but not to attack his opponent physically" (5, 402).

There is no doubt that in American culture, as in almost all cultures (17), boys receive more encouragement (reward) and less punishment for aggressive behavior than girls do. Many parents believe that the ideal boy should be able to fight back and defend himself when attacked (70), and boys are generally not made as anxious about aggressive behavior as girls are. As would be anticipated, during the preschool years, boys express more aggression than girls in play and fantasy. Physical attacks, fighting, negativistic behavior, quarreling, lying, tackling, verbal aggression, destructiveness, and temper tantrums are all more common among boys than among girls (52, 323–324).

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These sex differences become more marked with increasing age during the preschool period. According to the data of one observational study, 2-year-old boys and girls hit, scream, and cry with approximately equal frequency. By the age of 4, however, boys do more hitting, and relatively less screaming than girls do (45). This increase in sex differences with age probably reflects stronger, more thorough learning of patterns of aggressive expression that are appropriate for one's own sex.

70. Sears, Maccoby, Levin 195_

45. Jersild & Markey

52. Maccoby, 196_

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Identification Theory of Sex-Typing

In 1925, Freud introduced the term *identification* to explain an individual's ability to learn and adopt his parents' traits during the socialization process. Since that time, social learning theorists have developed the argument that a child learns his sex role through his identification with a male or female model. Thus, in social learning theory, identification leads to sex-typing. If a boy of 3 perceives his father as both attractive and similar to himself, he will begin to identify with that parent. As he begins noting and imitating his father's behaviors and mannerisms, he invariably will begin adopting many characteristics that are considered specific to the male personality.

Daily home activities, too, build the identity bond with the appropriate adult. Little girls may help their mothers bake cookies or make beds. Boys help their fathers rake the lawn or wash the car. **By their fifth birthdays, most children have learned which behaviors and playthings relate to which sex (Brown 1956; Fauls and Smith 1956; Hartup and Zook 1960).** A favorite form of childhood teasing—whose often-marked effect may indicate the importance of sexual identity to the child—involves mocking a child for behavior alien to his sex role. For example, the 5-year-old boy who plays with a doll often will be labeled a "sissy." The girl who roughs up aggressive peers or fights with boys will be singled out as a "tomboy."

In addition, the socialization process encourages behavior appropriate to a sex type. Boys are rewarded for being "tough," for "being a man," or for defending themselves against aggressors. They are discouraged from such "unmanly" acts as crying when they are hurt, physically or emo-

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Sex-Typing

During the preschool years, sex-typing figures prominently in the socialization of the child. Most parents pay considerable attention to the sex-appropriateness of their child's behavior, rewarding responses that are appropriate to his sex and discouraging those that are not. Thus, parents are likely to encourage a boy to "fight back" if attacked by a peer, but they are more likely to punish this kind of behavior in their daughter (70). If a preschool girl cries after losing a game, this reaction is likely to be accepted as appropriate for the "weaker sex," but a boy who shows tears is likely to be reminded that "little men don't cry." **By age 5, most children are keenly aware of sex-appropriate interests and behavior.** Presented with pictures illustrating sex-typed toys, objects, and activities (e.g., guns, dolls, cowboys, Indians, kitchen utensils), most 3-, 4-, and 5-year-olds prefer those appropriate for their sex (14, 22, 33).

Social pressures also foster appropriate sex-typing of behavior. The culture provides considerable reward for accepting one's own sex role and punishment for the manifestation of traits appropriate to the opposite sex. Thus the boy is pressured to model himself after his father, the girl, after her mother.

70. Sears, Maccoby & Levin, 1957
14. Brown, 1956
22. Fauls & Smith, 1956
33. Hartup & Zook, 1960

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Cognitive Theory of Sex-Typing

While the social learning theory of sex-typing enjoys wide acceptance today, another theory has been receiving increasing attention. This explanation, known as the *cognitive theory*, contends that the child does not acquire his sex type as an adjunct to his identification. Lawrence Kohlberg, the major proponent of the cognitive theory, maintains that, instead, the child first develops the idea of himself as a boy or girl and then perceives that certain attitudes and behaviors are categorized by sex type; he then begins to adopt those traits that are associated with his sex (Kohlberg 1966). Identification with the parent of the same sex, then, is a result of the child's developing interest in the activities and qualities of his own sex. This is a basic difference that distinguishes the identification theory from the cognitive theory of sex-typing. The identification theory assumes that a child's knowledge of his sex is the culmination of model identification, socialization, and cultural factors—in other words, that a child's sense of sex type is the last stage in the process. In contrast, the cognitive theory, which draws heavily on Piaget's concepts of mental development through experience, assumes this sequence: "I am a boy; therefore, I want to do boy

282 things." The child then finds it rewarding to adopt the appropriate traits of his sex (Kohlberg 1966). In the cognitive theory, a child's sense of his sex comes first, not last, as in the identification theory.

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Cognitive-Development Theory of Sex-Typing. Kohlberg (50) has presented a much different and intriguing theory of sex-typing based on "the child's cognitive organization of his social world along sex role dimensions" (50, 82). The most significant factor in sex-typing, according to this theory, is the child's cognition—his selection and organization of perceptions, knowledge, and understanding of the sex role concept. 362

Sex-typing is said to be initiated by the sex labeling of the child as a boy or girl, which occurs very early in life. The child's basic gender self-concept, his categorization of himself as a boy or girl, becomes the major organizer and determinant of his activities, values, attitudes, and motives. A boy in effect says, "I am a boy, therefore, I want to do boy things." and therefore the opportunity to do boy things (and to gain approval for doing them) is rewarding (50). The child's self-concepts about his sex role become stabilized at about 5 or 6 years, according to Kohlberg, and, once established, these basic sex role concepts generate new sex-typed values and attitudes. 363

Sex-typing is not viewed as a product of identification; quite the contrary, identification is seen as a consequence of sex-typing. Boys model themselves after males because they already have masculine interests and values; therefore, masculine ways of behaving, thinking, and feeling are more interesting and hence are imitated and adopted.

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Early Interest and Activity

While the young child is beginning to understand his own sex role, he also is displaying an active interest in his own body. Interest in the genitals and often some genital handling occur even in the first two years, and male infants have erections. By the third and fourth years, genital play and exploration are not uncommon. In the immediate preschool years, genital stimulation becomes more frequent as children realize that this activity gives them intense pleasure. One study of middle-class children indicated that approximately 50 percent of preschoolers engage in some genital play (Sears, Maccoby, and Levin 1957). The actual incidence of sexual exploration and masturbation may be higher, however, since many parents may be unaware of their children's sex play or hesitant to contribute data concerning it. Once young children have found their genitals to be sources of pleasure, they pay more attention to them and develop an active curiosity. They want to know the function of the organs and the reasons for anatomical differences. They may wonder why they are different from their parents, as well as why they are different from the opposite sex. Another inevitable sex-related question—though not necessarily prompted by genital curiosity—is the classic query: "Where do babies come from, Mommy?"

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SEXUAL MOTIVES AND CURIOSITY

Sexual motives include many kinds of wishes related to pleasurable—usually genital—sensations. There is some genital interest or activity before the preschool period. Male infants have erections, and masturbation and sex-play occur in very young children of both sexes, but erotic stimulation from the genitals becomes more intense during the preschool period. Many children discover that stimulation of the genitals produces pleasant sensations and may practice some modified form of masturbation (touching and manipulation of the genitals) during these years. According to the data of one large interview study of mothers of kindergarten children (70), about half of middle-class preschool children indulge in sex-play or genital handling. As many mothers are probably reluctant to report this kind of information, and because many children masturbate only in secret, these figures undoubtedly represent conservative estimates of the frequency of masturbation in young children.

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As pleasant sensations and gratification are associated with masturbation, the child's interest in the genitals increases. Moreover, the child is likely to have opportunities to notice the differences between his own genitals and those of adults and of the opposite sex. The discrepancies elicit curiosity about and interest in the genitals of others—especially those of the opposite sex—and a desire to understand the differences. Questions about sex—particularly about the origins of babies and anatomical sex differences—are common between the ages of 2 and 5 (34).

+70. Sears, Maccoby & Levin, 1957

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Parent Responses

Parents react in different ways to such youthful sexual interest and activity. In some cultures, there is little or no restriction on youthful sexual play, individually or as a group. Western culture, however, ranks among the most restrictive in this regard. Social forces compel parents to restrain their children's sexual curiosity, excitement, and activity. Seldom, except among the very poor, will young children be seen playing naked in their yards. In no social class is there a laissez-faire attitude toward masturbation as there is in other cultures. Instead, mothers often reprimand their children for openly masturbating. Thus, the mother introduces a dilemma. Though the child knows from experience that genital play produces pleasant feelings, he also knows that he may be punished. Such incompatible feelings often begin to produce the conflicting attitudes toward sexuality that commonly are harbored by the adult population.

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Another typical response to their children's sexual activity is for mothers to ignore the behavior while drawing the child's attention to another activity or toy. This technique probably reduces the incidence of sexual stimulation, but it may have other undesirable effects. If a child concludes that his sexual behavior and feelings – even his genitals – are taboo subjects, never to be mentioned, he will find it difficult to understand these matters. Lack of knowledge about his genitals, for instance, may create anxiety about them and the feelings associated with them. On the other hand, referring to them, but only in a negative fashion – such as associating them with urination or defecation – may lead the child to feel disgust for his sexual organs and activity. The familiar parental admonition that a child will harm himself by touching his genitals may substantiate for the child any connection he may have established between his sexuality and feelings of danger and fear of punishment. Needless to say, a child who forms any of these attitudes toward sexual feelings may have substantial difficulty in accepting the normality of sex as a young child and possibly as an adolescent and adult (Sears, Maccoby, and Levin 1957).

Some parents find effective ways to avoid making the sexual organs and sexual activity a source of conflict between pleasure and fear. A child whose questions are answered frankly and factually and without a parental show of embarrassment or secrecy generally will accept the answers with equanimity. After all, the child who has not been made wary of sex asks a question about his sex organs with the same ease that he asks why dogs bark or rain falls. Many parents who try an honest approach are relieved to observe this attitude and discover that the child does not want to know the whole story of the human reproductive system. Much more likely, he has a simple question which will be satisfied by a simple answer or analogy. When the answers are given on request, the child can gradually build up a proper understanding of his sex organs and sexual functions. In addition, the child will tend to trust his parent's assessment of sex and come to him or her when more serious sexual questions arise, as they inevitably will.

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In Western culture, however, parents are under strong pressure to suppress signs of sexual activity, interest, excitability, or curiosity in their young offspring. Of a large group of mothers interviewed, only 5 percent were completely permissive about masturbation, and less than 15 percent permitted the child to run about the house naked (70). Typically, mothers spank or scold if they discover the child masturbating openly. The genitals may then become the focus for conflict because they supply uniquely pleasant sensations, and, at the same time, evoke the anticipation of punishment and anxiety.

A second, less punitive type of response to the child's sexual activity frequently used by American mothers is to "nonlabel" or "mislabel" the child's sexual behavior when she observes it by distracting the child from what he is doing and suggesting tasks that might be more enjoyable. "In the case of sex behavior, a major method of training and control was the avoidance of stimulation; the avoidance of labels for sexual matters seems to have been one rather notable method of achieving this aim" (70, 214).

Discussing possible consequences of this handling of the child's sexual curiosity and activity, the investigators note:

> there may be some side-effects of these methods that many people would consider undesirable. . . . The child who has not been provided with proper labels for certain parts of his body, or for behavior related to sex, or for sexual feelings, may be somewhat handicapped in developing an understanding of sexual matters and an acceptance of his own sexual feelings without anxiety.

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> Mislabeling may have still other consequences. If a child is told not to touch his genitals because they are "dirty" from going to the toilet or if he is sent to the toilet whenever he is seen holding himself, on the assumption that he needs to eliminate, he may attach to sex some of the emotions he feels in connection with toileting: for example, disgust. Or, when sexually stimulated, he may experience anxiety that will be reflected in disturbances in toileting activities. And possibly the common warning to the child that he will "hurt himself" if he touches his genitals may strengthen an association between his sexual feelings and a feeling of impending injury or danger. None of these associated attitudes would be helpful to his sexual adjustment either in childhood or later (70, 214–215).

Sexual activity of any kind may become a source of conflict because, on the one hand, the activity provides pleasant sensations and, on the other, evokes anxiety and anticipation of punishment. Many instances of adolescent and adult sexual anxiety, misunderstandings, and handicapping ignorance about sex undoubtedly have their roots in punishment for early sexual activity or mislabeling of sexual acts and feelings in early childhood. "There is substantial evidence that the experiences of the child early in life have lasting and defining influences on the way in which he conducts his sexual life" (27, 216).

A child is not likely to develop anxiety associated with sexual feelings and sexual behavior if parents handle his sexual curiosity realistically, acting neither embarrassed nor secretive about questions or, on the other hand, overwhelming the child with too much information.

> When the child becomes interested in problems pertaining to sex and birth, his questions should be answered frankly, truthfully, and without embarrassment as they come up. That is not so difficult a job as one might think because children need and want very little information at any one time. If children ask where they come from, and they are told that babies grow within the mother's body, that answer will satisfy most children for that particular day, and, perhaps, for several weeks or months to come. . . . Very often parents make a problem for themselves by feeling that when the child asks the first question about sex, they are obligated to tell him everything. . . . Obviously this is neither necessary nor advisable (20, 72).

70. Sears, Maccoby & Levin 1957

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EFFECTANCE MOTIVATION AND ACHIEVEMENT. Effectance motivation is a major force in development because it leads to the learning of new acts, skills, behaviors, ideas, and concepts. Early encouragement and independence seem to strengthen this existing desire to achieve competence. They seem to be particularly effective at accelerating the motive to master intellectual activities, such as those encountered in school (Winterbottom 1958).

A study of the relationship between independence and achievement found that preschool children who spent a substantial amount of time engaged in activities classified as "achievement" activities—crayoning, painting, reading, and modeling clay—on the whole were less dependent upon their parents. These achieving children also asked for less help or emotional support than their nonachieving peers (Crandall 1963).

The children's high achievement motivation seems to be a direct result of parental treatment of their efforts. The high achievers in the experiment had mothers who had early begun a routine of urging and rewarding achievement and paying scant attention to requests for assistance. Ready praise and rewards for attempts at mastery produced children who often strove to achieve, outside as well as within the family circle.

Encouragement of mastery as early as infancy also increases later achievement motivation. Children who were encouraged in walking, talking, holding, and carrying objects achieved more in school than children whose mothers did not encourage these skills (Hollenberg and Sperry 1950). Furthermore, mastery striving is a persistent behavior, once developed. For example, an individual's strong preschool motivation to achieve in intellectual activities is most often retained throughout adolescence and into adulthood (Kagan and Moss 1960).

Correlates of High Achievement Behavior. As noted earlier, the independent, self-reliant child is the one most likely to be highly motivated to achieve, and, like independence, the motive is acquired early. The data from one study indicate that nursery school children who spend most of their time and effort in achievement activities (coloring, painting, making clay models, reading books) were generally less dependent upon adults and less frequently sought help and emotional support than their peers who participated in few "achievement" activities.

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Mothers of the "high achievement" children revealed in interviews that, from the child's infancy onward, they had rewarded and encouraged attempts at achievement and tended to ignore the child's requests for help. "Moreover, the mothers who usually spontaneously praised and rewarded their children's achievement efforts, even when the children did not seek approval, had children who displayed especially strong and frequent achievement efforts outside the home" (15, 429).

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In American culture, as in most societies, achievement is more strongly stressed and reinforced in the training of boys than of girls (70). It is, therefore, not surprising that in the primary grades, boys manifest more achievement motivation than girls on many criteria (e.g., interest in solving a puzzle they had previously failed), although these sex differences are not so evident during the preschool years (76).

The early development of high achievement motivation during preschool has prolonged and enduring effects. Winterbottom contrasted the early child-training procedures used by the mothers of preadolescent (8–10 years old) boys high in achievement motivation (as revealed in projective tests) with those used by mothers of boys low in achievement motivation. The former expected self-reliant and independent behavior at earlier ages, from nursery school age onward, and from the earliest years gave frequent and substantial rewards for independent accomplishment (76, 478).

Moreover, mothers who encouraged their children's early mastery of such basic skills as walking and talking had children with higher levels of school achievement than children whose mothers did not encourage early mastery (40). Reinforcement for early accomplishment seems to facilitate the development of a general motive for achievement and, more specifically, the desire to learn new intellectual skills and to perform well in school. Clearly, "early training in independence and mastery contributes to the development of strong achievement motivation in preadolescents" (76, 478).

Girls whose mothers rewarded their intellectual accomplishments during the first 3 years gained substantially in IQ between the ages of 6 and 10, and personality tests showed that they were highly concerned with mastery and competition. For example, a girl with an achievement-rewarding mother responded to a picture of a boy with a violin by telling a story in which a boy is "practicing the violin and wants to be good so he can play in Carnegie Hall." In contrast, a girl with a nonachievement-rewarding mother would reply, "The boy doesn't want to practice and wants to go out and play" (55).

Achievement behavior, especially in the intellectual area, is one of the most stable aspects of a child's personality. Girls and boys who show a strong desire to perfect and master intellectual skills during the preschool years tend to retain this motivation during adolescence and early adulthood. (55). The child who enters school with high achievement motivation—a strong desire to do well—is likely to develop into the adolescent and adult who is concerned with intellectual competence.

While the subjects of these studies were mostly from the middle class, the findings are probably applicable to other groups as well. The disadvantaged child grows up in a home almost completely lacking in intellectual stimulation and achievement orientation; generally he receives little or no encouragement or reward for independent achievements. Understandably, he acquires a low level of achievement motivation and, since achievement motivation is critical for success in school, he is likely to perform poorly there.

15. Crandall, 1963
76. Winterbottom, 1958
40. Hollenberg & Sperry, 1950
55. Moss & Kagan, 1961

In the studies of problem solving, several lead-

ing investigators have made use of five categories for mental processes, which we shall describe in some detail. The reader interested in further study of these processes should consult the review of this area of research by Kagan and Kogan[2] on which we have substantially based our approach.

The five mental processes which characterize effective problem solving are *encoding, memory, hypothesis-generation, evaluation,* and *deduction*—usually occurring in that sequence.

Encoding

Encoding refers to the comprehension and labeling of stimuli. Through the child's selective attention to a stimuli's specific aspects, these aspects are translated into perceptual images, words, and concepts. As the child develops during this period, words and concepts gradually become the dominant codes for labeling sensory information.

For example, a 1-year-old child presented with the shape

is likely to encode it only as an image. A 6-year-old, however, is likely to encode this shape as, perhaps, a boat, a bullet, or the bottom of a steam iron. As a result, when asked to select the same shape from a set of similar ones, the 6-year-old is apt to make errors which indicate that the shape had been labeled by one or more words. That is, once language is acquired, the child *assimilates* perceptions to his language labels. He relies on words as descriptions of objects rather than on the images as mental copies of those objects.

Nonliterate peoples, as well as the mentally retarded, do the opposite—they rely on images alone as codes for experience. The orientation toward the image seems to come about by necessity and to reflect a paucity of word skills. This assessment is based on studies of image-oriented persons who possess a remarkable facility, *eidetic imagery*, which is popularly called the "photographic memory." A person who has eidetic imagery can retain accurate mental pictures of sights he has seen only once and even then only for a short time. For example, he may be able to describe in detail the clothes worn by figures on a highway billboard or the print wallpaper in a relative's dining room. While eidetic imagery is fairly common in the normal population—perhaps 1 in 10 American school children exhibits it—it is especially prevalent among nonverbal, image-oriented persons. Approximately 1 out of 5 mentally retarded American children and several nonliterate peoples, such as the Ibo tribe of Eastern Nigeria (Wober 1967), possess eidetic imagery.

2. J. Kagan and N. Kogan. Individual variation in cognitive processes. In P. H. Mussen (Ed.), *Carmichael's manual of child psychology*. Vol. I. (3rd ed.) New York: Wiley, 1970.

Process 1: Encoding

The perception and comprehension of information in the environment is the first process in all problem-solving sequences. Encoding involves selective attention to one event rather than another, and a labeling or interpreting of the information in the event. The child encodes—or interprets—information in the environment naturally and spontaneously, but the nature of his interpretation changes with age. The infant or very young child usually translates experience into images; the older child is more likely to use words and concepts. Consider the following figure: ⊃ If this figure is shown to a 1-year-old he is likely to encode it as an image, for he has no other way to interpret it. The 6-year-old is likely to encode the figure using language—he might say, "It looks like a finger," or, "It looks like a pencil." If asked to reproduce it or select a figure from a set of similar ones, he might make an error that would reveal that he perceived it as resembling a finger or a pencil. He might draw it as ⟹ or ⟹ . We say that the 6-year-old assimilated the original figure to his language label. The school-age child typically uses words and concepts to interpret situations and the richer the child's repertoire of words and concepts, the more likely he will rely on them rather than images. This suggestion touches the issue of *eidetic imagery*.

Eidetic Imagery. Only a few children and very few adults in the Western world can maintain a complete visual image of a picture so that when it is taken away the person can describe it in detail (21). The child who can do this is said to have eidetic imagery. About 5 to 10 percent of the population of American school children have eidetic imagery. They can "see" in its original color an image of a picture for 45 seconds after it is taken away from them and can report details of it. However, children and adults among nonliterate groups (the Ibo of eastern Nigeria, for example) have a frequency of eidetic imagery that is close to 20 percent (9). Moreover, occurrence of eidetic imagery among mentally retarded American children is also close to 20 percent (62). The higher frequency of eidetic imagery among the mentally retarded and the Ibo might be the consequences of inadequate language resources and the tendency to use images as the primary unit in converting experience to meaning.

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INFLEXIBILITY OF ENCODING. While encoding is a necessary step in problem solving, there is a tendency for children to adopt fixed or inflexible solutions to problems. Understandably, children, dominated by sense perception, try to solve problems by imposing a single order on their sense perceptions—even though that order may be quite arbitrary from the problem-solving point of view. A study by Gollin illustrates the child's tendency to fix on one set of units to encode all his experience (Gollin 1966). For this study, the experimental children were required to learn to associate pictures of animals and objects with sketchy drawings that depicted these animals only poorly. The pictures and partial drawings were presented in pairs. For example, a detailed drawing of an elephant was coupled with only a few lines vaguely suggesting an elephant. Then the child had to learn to guess the animal from the partial drawing. During the learning trials, a number of different animals and objects were shown, but always in the same order. Later, when the children were tested, the experimenter discovered that the number of correct responses depended on whether the pictures were presented in the same order in the test as in the learning period.

When the pictures were presented out of their original order, children who had been given fewer learning trials performed better than children who had more learning trials. Gollin concluded that this occurred because children who had been given fewer trials had not overlearned the original order of picture presentation. That is, they had not fixed inflexibly on the order, while the other

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children had learned both the association between pictures in each pair *and* the order of presentation of each pair. The results of similar encoding studies could affect certain educational practices that may encourage such inflexibility.

ATTENTION AND EXPECTANCY. The ability to focus the selective attention required for encoding is related to expectancy—as well as other variables, such as anxiety. If a child knows what is about to happen, he will be prepared to focus his attention on a particular event and to perceive and encode the event more accurately. Expectancy's role is illustrated by a study in which kindergarten children and second-, fourth-, and sixth-graders were asked to repeat words spoken by a man or woman (Maccoby 1967). In some instances, the illuminated face of a man or woman appeared before the words were spoken; in other instances, the face was illuminated after the words were spoken. The children proved better at repeating words spoken by voices they were prepared to hear, and this tendency grew more pronounced with increasing age.

ATTENTION AND OTHER VARIABLES. Data indicate that boys exhibit different biases from girls in their comprehension and labeling of experience. For example, boys were found more inclined than girls to analyze geometric designs into their component parts (Kagan, Rosman, Day, Albert, and Phillips 1964). Class as well as sex affects selectivity of attention. The data on social-class differences have shown, for example, that middle-class children were more likely than their lower-class peers to use descriptive and analytic language to sort out similar designs.

Another important variable is age. Research has repeatedly confirmed that children 6 and 7 years of age exhibit a dramatic increase in their ability to direct and sustain attention. This increase is so striking that some investigators have suggested that a change in the central nervous system during this period underlies the greatly extended attention span. Others explain this change in terms of the child's growing concern during this period about making mistakes and having his concepts agree with the accepted standard. Because of their heightened apprehension, children may apply themselves more diligently to performing tasks and gaining a better understanding of reality. Thus, for example, one study concluded that the best predictor of children's "achievement behavior" was their conviction that success or failure was due to self-imposed limitations or outside forces (Crandall, Katkovsky, and Preston 1962). Achievement behavior was defined as "behavior directed toward attainment of approval—or avoidance of disapproval—in meeting certain intellectual standards." Children who saw themselves as responsible for their own success or failure scored highest in achievement behavior; conversely, children who felt that their destinies were beyond their control scored lowest.

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Preference for Single Strategies of Encoding. The possibility that the child (or the adult) becomes accustomed to using one set of units to encode experience is part of a more general tendency toward inflexibility—a tendency to view a situation or problem in only one way. In one experiment (*15*) children had to learn to guess the animal that was represented by a set of fractionated lines (see Fig. 11.2). The child was first shown a set of lines that represented a particular animal (e.g., an elephant) and then was shown the complete drawing of the elephant. The child had to associate the two so that when only the set of fractionated lines was shown to him he could correctly guess what animal the stimulus represented. The *order* of presentation of the pairs was *always* the same. Some children were given only a few trials (i.e., a complete run through the various pairs of animals); others were given many trials. When the children were tested later with the fractionated drawings, the number of correct guesses depended on whether the order of presentation of the original stimuli remained the same as it was during the original learning or whether the order was changed. If the order was the same as earlier, the children who had been given many trials performed better. If the order was changed, the children who had been given fewer trials did better. It seems that all the children were learning both the association between the fractionated lines and the picture *as well as the order* of occurrence of each pair. The children given only a few trials had not overlearned a particular order of presentation of the animal pairs and thus did better when the order changed. They were more flexible. Intellectual development consists, in part, of the learning of codes for events. As it is often helpful for the child and adult to be able to shift codes for different events and different problems, it is helpful if he is given practice with diverse ways to code reality.

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This conclusion has an important implication for educational practices. For example, many teachers have begun to use Cuisenaire rods to teach first graders the fundamentals of arithmetic and numeration. The rods are wooden sticks of different length and different colors. The number 1 is represented by a colored stick one unit long; the number 2 is represented by a stick of a different color twice as long as the one-unit stick. The advantage of this particular method of teaching numbers is that it gives the young child a concrete introduction to the concept of number as a magnitude estimator. Numbers are a new experience for the child. The stimulus $1 + 1 = \square$ is a new stimulus to be decoded. If the mental units given the child for decoding numbers are rods of different lengths and colors the child will build up quickly a strong tendency to translate all numbers and number problems into images of these rods. This method will be troublesome and disadvantageous when long division or multiplication problems are confronted. The young child should probably be weaned from the Cuisenaire representation of numbers before he becomes too strongly addicted to it and is unable to shift to a new translation system.

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The Role of Expectancy. The child's selectivity of attention is related, in part, to his expectations. If a child knows what events are about to happen (i.e., he has an expectancy of what he might see or hear), then he can prepare himself better for the event. Often such a preparation aids the accuracy of his perception. School-age children (kindergarten, and grades 2, 4, and 6) listened to a man's voice and a woman's voice simultaneously speaking two-word phrases (e.g., dog eat). The voices came simultaneously from two loud speakers placed 18 inches apart. One speaker was marked with the picture of a man's face, the other with a woman's face. When the child was to report the words spoken by the man's voice, the man's picture was lighted; when the child was to report the words spoken by the woman, her picture was lighted. On some trials the picture of the face was lighted *before* the voices spoke (the child was given a preparatory signal). On other trials the picture of the face was lighted *after* the voices spoke. With age, the children became increasingly better at reporting the words spoken by the voice to which they were told to listen. However, when the child was given a preparatory set—he was told which voice to listen to *before* the voices spoke—his performance was better than if he was told after the voice spoke (*42*; see Fig. 11.3).

Capacity for Sustained Attention. Developmental changes on a variety of intellectual tasks suggest that between 6 and 7 years of age there is a dramatic increase in quality of performance on problems requiring focused and sustained attention. This generalization seems to hold for both American children and those in other cultures. The child under 5 years seems easily distracted and has difficulty maintaining attention for a long time on a problem or communication from another person. These psychological changes in cognitive functioning are associated with important biological changes in the central nervous system, including the growth of neural tissue and changes in the electrical potentials generated by the brain. It is possible that an important reorganization of the central nervous system occurs between 5 and 7 years of age, and this reorganization may be partly responsible for the dramatic increase in the child's capacity for sustained attention (*70*).

15. Gollin, 1966
42. Maccoby, 1957

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Memory

The next step in the problem-solving process is memory. A child's ability to register and retain encoded experience affects the store of information and knowledge he has to draw on in solving problems. Since remembering is often a great effort, the quality of a child's memory depends on his motivation, that is, his interest and determination. Therefore, anxiety and intervening thoughts generally reduce the child's ability to register or recall memories. This retardant effect on memory parallels the negative effect that anxiety exerts on verbal skill. On the other hand, experiments in which younger children's memory is facilitated by overlearning often have resulted in a marked increase in the problem-solving capacity of those children.

VOCABULARY AND MEMORY. Vocabulary, images, and concepts help a child associate events and fix them in his memory. Thus, a child with a good vocabulary recalls new information better than a child with poor language ability. Studies show, for example, that an older child can remember a longer series of numbers, but, more important, that the length of the series he can remember increases in proportion to the child's familiarity with words. Confirming these findings—children from language-poor environments have been found to perform poorly at remembering spoken or written words. While verbal ability coincides with facility at remembering, a better vocabulary does not guarantee a better memory. Instead, the child who wants to retain information must actively use words to reinforce and even rehearse his recent memories. This was demonstrated in a study of children in kindergarten and grades two and five in which they were shown a set of pictures in a given order, and then shown the same pictures in different orders. Finally the children were asked to point to the pictures in their original order. The older children repeated the names of the pictures to themselves as they were first presented or while trying to recall them. These children did better at recalling the original order than the younger children. The kindergarten children also knew the names of the pictures, but they did not use this information to reinforce their memories of the order. Children of 5 years, taught to use words to remember the pictures, did significantly better on recall—despite children's tendency not to use verbal mediators spontaneously until they are 7 or older (Flavell, Beach, and Chinsky 1966).

ANXIETY. Many experiments have demonstrated that anxiety, interfering with attention, diminishes a child's memory performance. Messer, in his study of this effect, divided third-grade boys into three groups. The first group was made anxious by causing its members to fail an anagram test; the second group was permitted to succeed in the test; and the third was not tested at all. Then a story was read to all the subjects, who later recounted it as accurately as possible. The "anxious" first group scored significantly lower than the other two, which scored the same (Messer 1968).

LONG- AND SHORT-TERM MEMORY. Short-term memory refers to newly encoded information that is available for no more than 30 seconds after it has been registered. These memories are generally lost unless they are transferred to long-term memory. One study showed that the short-term memory of children 5 or 6 years old is notably shorter than the short-term memory found in adults (Morrison, Eisenberg, Haith, and Mindes 1968). The experimenters presented children and adults with several geometric forms, displaying each for less than a second. Afterward, the subjects pointed out the forms they had seen on sheets showing 10 geometric forms. All the children could recall two forms with some ease, while many of the adult subjects could recall three or four. Adults had used the mnemonic aid of associating each form with a simple, familiar figure, and thus retained the forms in memory more easily. The immediate memory of number or word sequences also improves with age. Children 10 years old can recall a string of six or seven numbers read to them, whereas the 5-year-old remembers five at most.

Process 2: Memory Functions

Memory refers to the storage of experiences for a period after they have ended. It had been assumed for many years that all perceived events were registered with equal strength. If a person could not remember an event that he perceived, it was assumed that the fault lay with his inability to recall it rather than with any differences in registration. Recent research suggests that it may be useful to distinguish between two memory processes—short-term memory and long-term memory. Short-term memory usually refers to a trace available for a maximum of 30 seconds, but typically for a much shorter period of time. It is believed that without special control processes, encoded information in short-term memory is not transferred to long-term memory and cannot be retrieved at a later time.

Kindergarten age children seem to have a more limited short-term memory than adults. Kindergarten children and adults were shown two, three, or four geometric forms for very brief exposures (.15 second) in a tachistoscope (i.e., a machine that allows very brief controlled exposures of visual stimuli). After the brief exposure the child looked at a card containing ten geometric forms and had to point to the forms which he had seen in the tachistoscope. The children did very well when they were exposed briefly to only two forms, but could not recall three or four geometric figures. More of the adults, by contrast, were able to recall three or four forms. It appears that the adults were coding the stimuli (i.e., saying to themselves that it reminded them of a star or a triangle or a circle) and, as a result, were able to hold more of the forms in memory (45).

As indicated earlier, the capacity of immediate memory (i.e., how much a child can report immediately after seeing or hearing a string of numbers or words) increases each year across the period 5 to 10 years of age. A 10-year-old can recall a string of six or seven numbers read to him, while the 5-year-old can typically recall only four or, at the most, five. The kindergarten child's inability to carry out a complicated instruction or provide the correct answer to an orally presented problem is sometimes caused by his forgetting the essential elements of the instruction or problem rather than by inability to do what was required. Often such forgetting is due to the fact that he does not rehearse, to himself, the essence of the instruction or problem. In one experiment, children of three ages (kindergarten and grades 2 and 5) were exposed to a set of familiar pictures; the experimenter pointed to a given number of them in a given order. Then that array of pictures was replaced with a new arrangement and the child had to point to the same pictures in the same order as he watched the experimenter touch them. The older children, in contrast to the younger ones, had better memory scores and were more likely to rehearse silently the names of the pictures as they were touched or while the child was attempting to recall them (as evidenced by distinct movements of the lips). The kindergarten children knew the names of the pictures, but their poor recall and low rehearsal were caused by a failure to use the "trick" of saying the names of the pictures to themselves in order to help memory (13). Thus possession of a vocabulary to encode objects is no guarantee that the child will use his vocabulary to help him remember information, or in other aspects of problem-solving.

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Individual Differences in Memory. Differences among children of the same or different ages in their ability to remember events seem to be related, in large measure, to the capacity to sustain attention, as well as the availability of vocabulary, images, and concepts that can be associated with the events and help to hold them in memory. If the child attends to the material, the most important determinant of his ability to remember anything is the active use of available words, concepts, and images to aid both in the registration of the event and in its recall. Both memory and vocabulary size improve with age. A 9-year-old can remember a longer series of numbers of words than a 5-year-old can; and the length of the series remembered is a function of the familiarity of the words. Similarly, with each year, the child's vocabulary grows larger, and children from linguistically impoverished environments perform poorly on memory tasks that involve language. Children with meager language do not comprehend or recall new information as faithfully or extensively as children with rich language resources (3, 23).

Other Factors Controlling Memory. Lack of selective attention also leads to imperfect registration of the event and, therefore, to memory failure. Failure to focus attention could be the result of several factors, but the most obvious, and perhaps the most frequent, are interfering thoughts and distracting stimuli. The negative relations between quality of memory and anxiety have been well documented. Anxious children display poorer recall than less anxious children and it is believed that the anxiety creates distracting stimulation that deflects attention from relevant incoming information and, therefore, impairs memory.

In a recent study, third grade boys were divided into three groups. One group was made anxious by causing them to fail on a word problem (43). A second group was allowed to succeed on the same word problem, and a third group was not given the problem at all. Each child was then read the short story that appears below and told to remember it.

> The American horse known as Man of War was a very fine horse. He ran in races in the United States, in France and in Germany. He was brown with a red mane and had very strong legs. Five times a year, he was in horse shows in Boston, where children came to see him trot and run. After watching him, the children were served hot chocolate, biscuits and fudge (43).

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Immediately after hearing the story, the children had to recall as much of it as possible. The children who were made anxious had markedly poorer memory for elements of the story than the other two groups, who were equal in their recall scores (43).

45. Morrison, Eisenberg, Haith & Mindes, 1968
13. Flavell, Beach & Chinsky, 1966
43. Messer, 1968

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Generation of Ideas and Hypotheses

Problem solving requires the ability to produce various possible alternative ideas and solutions. This implies that the child must possess a good knowledge of cognitive units—words, images, concepts, and the logical rules governing their use and relation to one another. Yet, the mere possession of this knowledge may only indicate that a child is *intelligent*. On the other hand, the child who combines these units in uniquely constructive ways is regarded as *creative*. Intelligence and creativity, therefore, do not necessarily appear together in a child. Indeed, insofar as these abilities have been measured, creativity is independent of intelligence. In all cases, the child's freedom and enthusiasm to generate ideas may be inhibited by the fear of making errors, so that measured performance in problem solving is sometimes misleading.

CRITICAL ATTRIBUTES. Much problem solving involves the recognition of similarities. The judgment that two objects are similar presumes the ability to perceive that they share certain salient features or *critical attributes*. These attributes provide a means for recognizing the conceptual similarity between things, as well as their literal and concrete likenesses. For example, a knowledge of critical attributes makes clear that the hummingbird as well as the giant condor, though vastly different in size and habits, are both members of the class of birds. The same knowledge would preclude the placement of the bat—which is a flying rodent—in the same class as the hummingbird, even though his wings make him superficially similar to a bird. Conceptual similarities permit objects and ideas to be sorted into classes that are more meaningful and more inclusive of different objects that may be unlike in specific details, and therefore more stimulating of new ideas and hypotheses. For example, although birds differ widely among the various individual species, they all possess the typical or critical attributes of the concept of bird.

Social experience also plays a role in the perception of certain critical attributes. Not uncommonly, for example, children who are led to believe that an adult's importance is based on his race may learn to prize lightness or darkness of skin. Other children will associate importance with creativity, character, education, social position, or wealth.

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Process 3: Generation of Ideas and Hypotheses

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Encoding (the comprehension of events) and the storage of information in memory are typically the first two processes in a problem-solving sequence. The third process is the generation of possible solutions: the production of alternative ideas to solve a problem. This process is occasionally called the *induction phase* of problem-solving, and is closely related to the notion of creativity.

In order to generate ideas successfully, the child must possess (1) the necessary knowledge or cognitive units, (2) a permissive attitude toward error, so that he is not afraid of making a mistake, and (3) the less palpable ingredient, *insight*. Generation of hypotheses is always involved when a child tries to find a basis of similarity among objects or attempts to figure out how to solve a problem.

The Importance of Critical Attributes. The child's judgment that two objects are similar or alike is partly a function of the degree to which those two objects share what have been called *critical attributes*. That is, the conceptual similarity between two objects is typically based on the shared presence of a few salient elements, rather than a large number of shared elements. Adults call a chihuahua and a wolfhound both dogs because they share the critical attributes of a bark and other species-typical characteristics. However, a chihuahua shares a larger number of attributes with a Siamese cat (size, short hair, frequency of "residence" in a small apartment) than it does with a wolfhound. But because the chihuahua and the cat do not share the same critical attributes, they are not judged as being members of the same class.

The critical attributes that define specific concepts will vary with the child's learning experiences. For example, children who learn that social class and its accompanying prestige are defined by the critical attributes of *wealth* rather than *education* will probably, as adults, invest more effort in accumulating material wealth than those children whose definition of social class has education as the critical attribute. First grade children for whom straight versus curved lines are the critical attributes for letters of the alphabet may confuse small case *d* with small case *b*, but not capital *C* and capital *E*.

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Typically, the child with a rich and varied storehouse of images, words, and rules is regarded as *intelligent*. The child who uses these units in a unique and constructive way is called *creative*. Intelligent children can be either creative or noncreative.

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CREATIVITY IN PROBLEM SOLVING. As we have suggested, *creativity* can play an important, though little-understood, role in the generation of ideas and hypotheses. Creativity seems to be an ability that, in a sense, stands alone. Studies have found that, in addition to its independence from intelligence, creativity also is unrelated to academic aptitudes or achievement (Wallach and Kogan 1965). In these studies, four criteria of creativity were devised. Fifth-grade children were then tested against these criteria to assess their creativity. The children had to give examples of such concepts as "round things" (ladybugs, cookies, eyes) or "things that move on wheels" (cars, bicycles, carriages); propose practical uses for such items as a cork, a chair, and a newspaper (plug a leak, feed a fire, hit a dog); suggest possible similarities between such pairs as cats and mice (four feet, fur, sharp teeth) and milk and meat (come from animals, eaten as food, are kept in refrigerators); and lastly, view abstract designs and speculate on their meanings or interpretations. The researchers found that creativity performance in one of the tests could be used to predict performance in others. In addition, the subjects' overall creativity scores were found to be unrelated to standard measures of academic aptitude or achievement. It was equally likely that individuals with *low* scores in academic ability scored high or low in creativity; conversely, individuals scoring high in creativity may have scored either high or low in academic ability.

In this same study sex differences in creativity were correlated with social factors. **Among boys, differences in creativity were not significantly related to social behavior.** Girls, on the other hand, exhibited more complex interdependence between creativity and social relations. **Girls who were highly creative as well as highly intelligent were popular with friends and self-confident in school. Girls with high creativity but low intelligence were socially less cautious and hesitant than the first group,** but also less popular with their friends. **Girls with low creativity and high intelligence, although sought out by their schoolmates, were more aloof and cautious than the two other groups of girls.**

Another researcher also studied creativity in children 7 to 8 years of age, using similar creativity tests (Ward 1968). In this work, too, the experimenter found that although scores on each of the creativity tests correlated with one another, they were not related to the children's intelligence.

Most studies in this area reveal that some creative children may not display their creativity unless they can undertake problem-solving tasks in the spirit of a game. When challenged under serious test conditions, some of these otherwise creative children fail to score well. Thus, many investigators believe creativity is best expressed in an atmosphere where the child feels free to take chances and risk unusual ideas—and errors. In short, creativity blossoms where the child can be "playful"—a not unnatural connection considering our discussion in Chapter 6 on the relationships between play and creativity.

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Generation of Hypotheses and the Concept of Creativity. The possession of a rich reservoir of knowledge is separate from the freedom to use that knowledge. Typically, the child with a rich and varied storehouse of images, words, and rules is regarded as *intelligent*. The child who uses these units in a unique and constructive way is called *creative*. Intelligent children can be either creative or noncreative. In one study, fifth grade children were given standard tests for their intelligence as well as tests of creativity. The tests for creativity required the child to generate many unusual hypotheses. For example, in one test the child would be told a characteristic and asked to name as many objects as he could that had that characteristic (e.g., name all the things that you know that are *sharp; round*). The children were also asked to think up varied uses for objects (e.g., tell me all the different ways that you would use a newspaper, a cork). In a third test the child was shown a line drawing as seen in Fig. 11.4 and asked to think up all the things each drawing might be. He was also shown a nonsense line design as shown in Fig. 11.5 and asked to say all the things the nonsense design made him think of. The child was classified creative if he gave many answers to each of the tests, some of which were very unusual—unique in comparison to the answers given by the other children. The children were grouped into four categories: highly intelligent and highly creative; highly intelligent and low in creativity; low in intelligence and highly creative; low in intelligence and low in creativity.

The girls who were both highly intelligent and highly creative were very self-confident in school and were popular with their friends. The highly creative, but low-intelligence girls, on the other hand, seemed to be just the opposite in personality. **They were cautious, hesitant, and had little self-confidence.** The low-intelligence, low-creative girls were slightly less cautious and hesitant than were the high-creative, low-intelligence girls, and the former were more popular and outgoing with their friends. Finally, **the highly intelligent but low-creative girls were sought out by others, but they often failed to reciprocate such overtures—as if they were a little aloof or cautious with the other girls. Differences in creativity among boys did not relate closely to their social behavior with their peers.**

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In general, the creative child who was intelligent was willing to take a chance, to risk a "crazy" idea. He seemed to have a less severe attitude toward error. The girl who was both intelligent and creative seemed to be successful both in school and in her relationships with her peers. These children seemed to be confident and free of anxiety over generating unconventional ideas (66).

66. Wallach & Kogan, 1965

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Generation of Hypotheses and Learning Set. One of the clearest demonstrations of the importance of developmental changes in the generation of ideas is seen in a phenomenon called learning set or "learning to learn." A learning set is the acquired set or attitude that is relevant to solving a particular class of problems, a disposition to attend to the relevant stimuli in the problem, and to discard incorrect classes of hypotheses. In brief, the child learns a general solution approach to a specific class of problems. Thus, if a person played 20 Questions each day for 100 days, his efficiency and the quality of his questions would improve daily, even though the specific "secret" object he was trying to guess changed each day. He would be learning to ask better questions, and learning *not* to ask questions that yield little information.

The problems used with children to explore "learning set" usually involve a series of discriminations in which a pair of objects is presented to the child. The child is told that one of the objects is correct and if he picks the correct one he will get a penny. Suppose that the first pair of objects presented to the child were a red and a yellow cube and the experimenter had decided that the yellow cube was correct. If the child picks the yellow cube he receives a penny; if he picks the red cube he receives nothing. Initially, a 5-year-old might behave as if the position of the cube, whether it is on the right or the left, is the clue to correctness. If the yellow cube were on the right and he picked it and was rewarded, he would likely pick the cube on the right on the next trial even though the yellow cube were on the left. His initial hypothesis to solve this problem was that *position* was the key to the solution. Eventually the child will solve the problem and pick the yellow cube consistently, regardless of its position. After solving this problem he is presented with a different one. Now he is shown a bird and a four-footed animal of the same size and coloration, and the experimenter has decided that the bird is correct. The key to the solution has nothing to do with color or size but rather with two versus four feet.

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However, the 5-year-old child who had solved the yellow-red cube problem earlier would be likely to solve this problem more rapidly as a result of having first had the cube problem. He has learned something from the initial problem: he has learned to disregard the initial hypothesis of position. The more rapidly he eliminates incorrect hypotheses that he ordinarily would try, the quicker he will solve the problem. Learning to learn is a combination of disregarding preferred hypotheses that are of no help, and learning to attend to the new and relevant aspects of a problem.

In one study *(40)*, learning-set problems were administered to preschool children, fifth grade children, and college students. The child was shown a pair of objects and was told to guess which one was correct. He was given several chances with a specific pair of objects and then was given a new pair of objects and, therefore, a new problem to solve. Each subject was given ten different problems each day. **There was an orderly progression in the efficiency with which a learning set was acquired (see Fig. 11. 6). It took the preschool children 6 days (ten problems a day) to learn to solve each new problem quickly.** The fifth grade children required only 3 days, and the college students only 2 days in order to arrive at a point where they could solve a discrimination problem within one or two trials. **The increasing efficiency of the older children was due to (1) greater flexibility in eliminat-**

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ing incorrect hypotheses, (2) the availability of a greater number of hypotheses, and finally (3), the faith that there was a correct solution—that analysis and attention to the stimuli would result in successful solution. **In addition, the child learns that the content of a problem does not have to be realistic or related to his personal life. The 6-year-old has not yet learned this principle** and he occasionally brings in personal items from his own life experiences in solving problems. For example, Scottish children were administered problems of the following type:

> There are three boys, John, Bill and Pete, and they go to three different schools, the North school, the South school, and the West school. John goes to the North school, Bill goes to the South school, where does Pete go?

A 6-year-old child might say, "Pete goes to the North school because my brother Pete goes there," confusing his own personal experiences with the arbitrary content of the problem. **The 10-year-old would realize that "West school" was correct. Children must learn that a formal problem can be divorced from reality and that a solution can be arrived at logically,** through thinking *(8)*. As we shall see later, this idea is central to Piaget's conception of intellectual growth during the early school years.

40. Levinson and Reese, 1967

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THE ROLE OF LEARNING SET. Another factor that plays a part in the generation of ideas and hypotheses is *learning set*. Learning set is the application of experience gained in solving one problem to solving other problems. A child's efficiency in using experience in this way improves steadily with age, continuing into the college years. **For example, in one typical study of learning set, preschool children took six days to learn to solve a new problem in a progression of similar problems; but fifth-grade children required only three days (Levinson and Reese 1967).**

Increasing efficiency in learning set follows on the child's expanding ability to generate hypotheses and mentally eliminate incorrect guesses. A child's growing confidence that problems have correct solutions also contributes to this improvement. Moreover, between the ages of 6 and 10, children learn that formal problems can be di-

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vorced from personal attitudes and solved logically.

Tests of learning set. In typical studies of learning set, children select one of two objects from a variety of different pairs of objects. The criterion for a "correct" selection is arbitrarily set by the experimenter, who chooses some attribute of the object, which is unknown to the subject. For each correct choice, the child is rewarded. Therefore, as the child progresses from one object pair to another, he can apply his previous criterion-learning experience to learning the criterion for the next selection between objects. For example, children may be shown a series of pairs of colored chips—perhaps red-green, red-yellow, and red-black. They then would be asked to select one chip from each pair. The criterion for the "correct" choice may be fixed as the "red one." After a number of trials the child is expected to recognize that color, not position, determines the proper selection. After learning this, the child may be shown a spoon and fork, both of the same size and color. The experimenter may decide that the spoon is the correct choice. The children now are expected to have learned from their previous experience to quickly discard certain hypotheses such as position. Therefore, they should choose more quickly on the basis of whether the utensil has tines or a scoop.

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METHODS OF SORTING CONCEPTS. When generating hypotheses, children exhibit both formal developmental as well as individual differences in the ways that they classify information. Depending on their age and other personal factors, children indicate preferences among four approaches to the construction of concepts (Kagan, Moss, and Sigel 1963). Those four approaches are:

1. *Superordinate or categorical:* grouping objects as "wholes"; for example, categorizing car, train, and bus as "vehicles," or horses, mice, and birds as "animals."
2. *Functional-relational:* grouping objects according to some relation between their functions; for example, describing nine boys who play baseball together as "a team," or grouping gasoline with cars, since gasoline fuels cars.
3. *Functional-locational:* classifying objects because of common location; for example, classifying blackboard, desk, and notebook as "school things."
4. *Analytic:* grouping objects by some manifest, similar part; for example, all people with blonde hair, or all hoofed animals.

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Age-related trends. Many studies have demonstrated certain age trends in the use of these approaches to concept construction (Sigel 1953; Kagan, Rosman, Day, Albert, and Phillips 1964). For example, children 4 to 6 years of age most often classify visually presented objects to functional-relational categories (the boys play ball together). Older children seem to prefer both superordinate and analytic groupings. Children in lower social classes tend toward functional-relational grouping more frequently than their middle-class peers. With increasing age the preference moves toward analytic groupings of visually presented objects.

In word-sorting tasks, the preference trends are opposite to those described above. When subjects 6 to 9 years old told of the likenesses they detected among word groups, the use of analytic groupings was found to have *decreased* with increasing age; on the other hand, the use of superordinate categories increased (Olver and Hornsby 1966). With exceptions, most investigations find that analytic concepts are used more frequently with pictures than with words.

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Generation of Hypotheses in Concept-Sorting Tasks. There are important developmental as well as individual differences in the kinds of conceptual categories the child uses to classify information. Normally we are most concerned with the content or particular meaning of the concept (e.g., Does the concept deal with people, animals, plants, cars, or school?). However, a second aspect of a concept pertains to its formal qualities. The formal aspect deals with the quality of the grouping, independent of its specific content. Some of the major formal dimensions (37) include:

1. Superordinate or categorical concepts—When a categorical concept is used it characterizes or represents a shared attribute among the objects. The child who groups pears, apples, or bananas together under the label *fruit* is using a superordinate concept.
2. Functional-relational concepts—In these concepts the basis of similarity involves the relation between or among members of the class. Examples of functional-relational concepts include grouping together four children because they play together or grouping a match with a pipe because the match lights the pipe.
3. Functional-locational—In this case the members of the class share a common location. The child who groups all animals that live on a farm is producing a functional-locational concept.
4. Analytic concepts—The basis for similarity involves a manifest or public component that is part of each stimulus in the category. An example would be to group together all living things that had legs or all objects with a vertical stripe.

There are lawful developmental changes in the use of these four conceptual categories. As the child grows he is more likely to use superordinate categorical dimensions and less likely to use functional dimensions in classifying or grouping familiar materials together.

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The Meaning and Significance of Analytic Concepts. The tendency to produce analytically based concepts with visual stimuli (objects or pictures) tends to increase with age—because of both a tendency to think before acting as well as a preference to analyze the stimulus materials. Children 6 to 11 years of age were shown a set of three pictures such as in Fig. 11.7 and were asked to select two pictures that were alike in some way. With age, there was an increase in number of analytic concepts. The older children would be more likely to say that the watch and the ruler go together because they both have numbers, rather than the watch and the man go together because the man wears the watch. Similarly, the older children would be more likely to group the house and the pipe together because they both have smoke coming out, rather than to pair the match and the pipe because the former lights the latter. Analytic concepts increase with age in part because older children often pause and reflect longer in generating concepts than younger children do. In one experiment, one group of school-age children was instructed to wait 15 seconds before telling the examiner the conceptual basis they selected; a second group was told to respond quickly (34). The former group produced more analytic concepts than the latter group.

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Relevance of the Material to Be Categorized. It is important to realize that the child who uses analytic or relational concepts with pictures may not do so when he is presented with words. The child's strategy of classifying information depends to a great extent on the material being classified. Subjects 6 to 19 years of age were asked to state the similarity among groups of words (49). The subject was first read a pair of words, then a third word was added to the pair, a fourth word to the trio, and so on until he had the task of explaining the similarity among eight words. The eight words—in order of their presentation—were banana, peach, potato, meat, milk, water, air, germs. The use of an analytic conceptual basis to tie the words together decreased with age; superordinate categories increased. It will be recalled that, with pictures, analytic reasons increased with age. How are we to interpret the fact that the relation of age to use of analytic or superordinate concepts depends on whether the child is working with words or pictures?

37. Kagan, Moss, & Sigel, 1963

34. Kagan, Rosman, Day, Albert & Phillips, 1964

49. Olver & Hornsby, 1966

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Dependence on stimuli. While some studies suggest that age trends determine children's concept-sorting ability independent of what the stimulus is, other data seem to counter this contention. For example, one study found that while lower-class children could fairly easily categorize familiar three-dimensional objects, they had considerable difficulty sorting out pictures of those same objects (Sigel, Anderson, and Shapiro 1966; Sigel and McBane 1967; Sigel and Olmsted 1967). Thus, it would seem that the type of stimulus does influence a child's performance at concept sorting.

Another study contains an even clearer indication that the type of stimulus affects the child's classification processes (Wohlwill 1963). This study, using abstract representations of numbers as well as numerals themselves, compared two responses—the relational ("Select the larger number of dots") and the absolute ("Select the numeral 5"). When children were shown dot patterns or groups of triangles or crosses and asked to select the numerically smaller patterns or groups, they readily made selections based on such relative quantity—three dots being recognized as fewer than four, two triangles as fewer than three, and so on. However, using the same patterns and groups, the children had substantial difficulty selecting an absolute number as represented by the patterns and groups (five dots for the numeral 5, and so on). When shown the actual numerals, on the other hand, they made absolute responses much more readily, selecting, for example, the numeral 5 when it was requested.

It appears, then, that the stimuli definitely affected the child's ability to make desired responses. Therefore, unless the specific stimuli are taken into account, it is difficult to be certain that a child's observed responses are the only ones he can make in a concept area; given other stimuli, he might well make new responses.

Social influences. Children seem to be aware at an early time that adults regard certain ways of thinking as "good" and others as "bad." This understanding, investigators have found, results from the child's observation that frequently adults are more lavish in their praise when a child succeeds in difficult tasks or after a determined effort. As a result, children may associate success in difficult tasks with pleasurable feelings—and may therefore be motivated to develop more subtle skills in concept sorting. For example, if a situation makes functional groupings easier and analytic ones harder to determine, even a child of 6 or 7 may prefer the harder grouping if he thinks his parents or teachers regard it as more desirable. Such thought tendencies, established by expressed parental values, can result in habits of mind. Thus, an older child may have developed an analytical mind not because he had an inherent analytical cast to his character, but because his parents preferred such thinking and expressed their preference to him.

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The Motive for the "Elegant" Concept. The child has standards regarding the quality of the concepts he produces on a test, just as he has standards regarding the quality of his behavior with others. The school-age child has learned, to some degree, what kinds of answers in a concept-sorting task are of high quality—i.e., "good" concepts to produce. Part of his judgment is related to the subtlety of the category, the amount of work required to produce it. An answer to a hard problem is much more valuable than an answer to an easy one. Thus the specific stimulus array shown to the child is important in determining the concepts he chooses to draw from it. If the stimulus array makes functional concepts easy to detect and analytic ones difficult, the older child is likely to select analytic concepts because he believes them to be better, more elegant. The older child may choose the analytic concept not because he failed to note the relational aspect but because he believes them to be "better," more elegant. Hence it is inappropriate to say that a child is analytic or relational without specifying the stimulus materials presented to him.

An illustration of the importance of the stimulus array on ease of conceptualization is contained in a study in which children had to learn either a relational or an absolute categorization of number. Children in grades 1, 3, 5, and 8 were presented with pairs of stimuli representing numerical amounts and told that one stimulus was correct. The children had to learn either a relational (pick the smaller number of the pair) or an absolute (always pick the number 5) conception of number.

One group of children was presented with *perceptual* representations of the numbers (e.g., five dots versus seven dots, three dots versus five dots). A second group was presented with an *abstract* representation of the numbers in terms of sets (e.g., five triangles versus seven squares, five crosses versus three circles). A third group was presented with actual pairs of numerals (the number 5 versus the number 7, the number 5 versus the number 1; 73).

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Under the perceptual and abstract conditions, acquisition of the relational concept (pick the smaller) was easier than acquisition of the absolute concept. When the stimuli were numerals, the absolute concept was very easy to attain. The importance of the mode of presentation was clearest among the first grade children. The relational concept was easy to attain under the perceptual conditions; the absolute response was easy to attain under the numeral condition; but both relational and absolute concepts were very difficult to obtain under the abstract condition. It is not reasonable to conclude, therefore, that first grade children are preferentially relational or preferentially absolute in the way they think about number concepts. The ease with which they conceptualize number depends intimately on how the material is presented. A preferred conceptual response is rarely independent of the material that is being classified. Similarly, a child is not to be classified as analytic or categorical, for he may be analytic with visual stimuli containing subtle analytic cues, but superordinate when presented with verbal representations of those objects. The descriptive term *analytic* is like the term *prejudiced*. In both cases, we must know the *target of the attitude*.

73. Wohwill, 1963

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Evaluation

312 The next step in the problem-solving process is evaluation of the hypotheses generated. At 2 years of age, a child may already exhibit individu-

313 al differences in the degree to which he evaluates the quality of his thinking. One child acts impulsively; he makes decisions on the basis of his first hypothesis. Another will pause and proceed cautiously, reflecting on the relative value of many different hypotheses. Whichever behavior the child displays—impulsive or reflective—this behavior tends to persist into later life and to emerge in most tasks that the child undertakes. Given training, however, children seem able to reverse either tendency.

A test in which the child matches familiar figures is the instrument most often used to evaluate impulsive and reflective behavior in problem solving. The child is shown a standard stimulus and six variants of the standard. He selects one variant that is identical to the standard, while the experimenter observes how long he takes to make his correct responses and how many responses he makes. Among American children the response time increases while errors decrease steadily between 5 and 12 years of age. The general rule is that the shorter the response time, the more errors a child makes. Reflective children respond slowly and make few errors. They also delay longer than impulsive children before describing pictures or answering an adult's questions; and they make fewer errors in tests of reading and deductive reasoning.

Studies of eye-tracking movements also reveal that reflective children make more systematic and thorough examinations of all the variants before they offer hypotheses. In contrast, impulsive children frequently answer even before they have scanned all the variants.

THE TEACHER'S INFLUENCE. A teacher's impulsive or reflective behavior may influence a child's behavior positively or negatively. A random group of 20 children from 20 classrooms was tested for impulsivity/reflectivity in the fall and then again in late spring (Yando and Kagan 1968). These children displayed behavior changes that paralleled their teachers' impulsive or reflective manners. The most pronounced effect was that of reflective teachers on impulsive boys; they showed the greatest increase in decision-making time.

Process 4: Evaluation

444 We now focus on a fourth process in problem-solving, that of evaluation. Evaluation pertains to the degree to which the child pauses to evaluate the quality of his thinking, and this process influences the entire spectrum of mental work: the quality of initial encoding, recall, and hypothesis generation. Some children accept and report the first hypothesis they produce and act upon it with only the barest consideration for its appropriateness or accuracy; these children are called impulsive. Other children devote a long period of time to study and reflection and censor many hypotheses; they are called reflective. This dimension is evident as early as 2 years of age, and seems to be consistent and relatively stable (27, 29).

Matching Familiar Figures. One of the tests used to assess the tendency for the child to be reflective or impulsive is called Matching Familiar Figures (see Fig. 11.8). A child is asked to select from the six variants one stimulus that is identical with the standard. The major scores coded are the time the child takes to select his first hypothesis and the number of errors he makes. Among American children there is a dramatic decrease in errors and a corresponding increase in response time from 5 to 12 years of age. Moreover, the faster the child's decisions, the more mistakes he makes. Children who respond quickly and make many errors, in contrast to those who respond slowly and do not make errors, tend to retain this disposition over time (i.e., this preferred tendency is stable). Moreover, the reflective children (those who respond slowly and make few errors), in contrast to the impulsive children, wait longer before they describe a picture, delay longer in answering a question posed to them by an adult, are less likely to report words that did not appear in a list that was read to them, are less likely to make errors in reading English prose, and make fewer errors in inductive reasoning tests. In one study, first grade children were given tests of inductive reasoning. On one test the child was told three attributes of an object and he had to guess the object (e.g., What is yellow, melts in the sun, and you eat it? What has doors, wheels, and moves?). The impulsive children responded more quickly to these questions and made more errors than the

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446 reflective children. If one studies the eye-tracking patterns of these two groups of children, the reflective children scan visual stimuli in a more systematic way and are more likely to search every one of the variants before offering a solution hypothesis. The impulsive children often answer before they have examined every variant, and adopt a much riskier strategy.

It appears that one can change a child's disposition to be reflective or impulsive through training. Some impulsive children were merely told to inhibit their responses on the Matching Familiar Figures test. After several 30-minute sessions of such training in inhibition, they showed longer response times than untrained, impulsive children.

The teacher's tendency to be reflective or impulsive can also influence the child. Each of 20 first grade teachers was classified as reflective or impulsive through use of an adult version of the Matching Familiar Figures task. Then a random group of children from each of the 20 classrooms was tested in the early fall and again in the late spring to determine if exposure to a teacher with a preferred strategy influenced the child's tempo. The children changed in a direction consonant with the teacher's tempo, and the effect was most marked for impulsive boys assigned to teachers who were both reflective and experienced. These boys showed the greatest increase in decision time over the course of the school year. Thus the tendency to be reflective or impulsive is stable over time, across varied tasks, and is modifiable.

The Basis for Reflection-Impulsiveness. One of the factors causing a reflective or impulsive attitude is fear of making a mistake. The more apprehensive the child is of making an error, the more likely he will be reflective. Reflective children are concerned with error and wish to avoid it at all costs; impulsive children seem minimally apprehensive about making a mistake and respond quickly. The increase in the tendency among American children to become reflective with age seems to reflect a change in the more general disposition for American children to grow more cautious with age, to become increasingly concerned with avoiding a mistake (10).

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Deduction

Deduction and hypothesis-generation complement each other. For example, the idea that trees and plants are similar because they both have green leaves leads to the deduction that trees and plants both somehow use leaves in their life processes. Hence, the child's bank of rules (for example, knowing that green leaves relate to plant life) is the most important set of cognitive units determining deductive ability.

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Still debated, however, is the question of whether a child's ability to use rules—not merely acquire them—changes significantly from 4 to 12 years of age. Some investigators feel that deductive ability continuously improves as new rules are absorbed, but that no fundamental change occurs in reasoning skill. Other psychologists, and Piaget is among them, contend that a child experiences a progressive development of reasoning skill. At first, therefore, the child possesses only a primitive ability to comprehend and apply elementary rules; thereafter, through experience, this ability is gradually elaborated to include very precise applications of extremely subtle rules.

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Process 5: Implementation of Hypotheses—the Deductive Phase

The processes of hypothesis generation and deduction are often complementary and are regarded as the essence of thinking. Generation of hypotheses and deduction of conclusions typically occur together, for to realize that both air and ocean have permanent, spatially located currents is simultaneously to deduce that each flows in a specified direction and each influences the weather. Deduction refers to the application of a rule—formal or informal—to solve a problem. Hence the most important set of cognitive units controlling quality of deduction is the child's storehouse of rules, which increases with age. Some of the rules are mathematical ($8^2 = 64$, $18/3 = 6$); others are more informal (thundershowers usually occur in the summer). These rules are critical for the solution of problems. One of the important theoretical questions concerning cognitive processes centers on whether there are basic changes in the use of rules by children of different ages across the period 4 through 12 years of age. A simplistic point of view assumes that the child merely acquires new and different rules each day and stores them for future use, but there is no deductive rule that is necessarily difficult or impossible for a 5-year-old child to acquire.

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An alternative assumption is that some rules are too difficult for young children to acquire and, as a result, there must be stages in the development of reasoning skills. Jean Piaget believes in this second position and we shall now consider his ideas in some detail.

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Verbal mediation is common in the child's generalization of his responses. Through verbal mediation, he extends the same words or labels to include many objects which all evoke the same response. The child applies the word *game* to certain physical activities. Since he enjoys playing tag and blindman's bluff, he is well disposed toward other activities called games; thus, he can be expected to respond to them favorably. When his grandfather verbally offers to play "a game of checkers" with him—a game the boy has never played—the boy applies his acquired game response to the new stimulus of checkers and he decides to play checkers. Generalization, mediated by words, permits the child to respond—both negatively as well as positively, of course—to new stimuli the first time he encounters them. For this reason, verbal mediation is critical to the child's learning and to his problem solving.

A transposition experiment provides a good example. In such an exercise, the youngest subjects select an object because of its relationship to other objects. For example, the child is rewarded for selecting the largest of three black squares. Later in the experiment, the same children are shown three more squares, the smallest one exactly the size of the largest one selected earlier. They are told to select the largest square. Young children who do not have developed language ability cannot transpose the concept of relative size from the first trial to the second. Instead, they are attached to the specific square size, which they will select again for many trials even though they now receive no reward for doing so (Kuenne 1946). Kindergarten children in the same pair of trials are strikingly more advanced. Because they have verbal ability, they remind themselves to

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select the largest square in the second group. To do this, they use words as verbal mediators.

Once a child learns to use verbal mediators, he also can do well in an area of learning that involves *reversal-shift* problems. The child's basic task in such an exercise is to shift his responses and do the opposite of what he did earlier in the identical circumstance. Earlier he might have been rewarded for picking the larger of two blocks, one black and the other white. The size was the key characteristic, not the color. After the child learns to pick out the larger block regardless of color, the task is changed, introducing the reversal shift. The child must completely reverse his response and pick the *small* block this time. The *nonreversal shift* is another kind of change and demands a different response. This time the child would have to choose the block on the basis of color—previously an irrelevant characteristic—rather than on the basis of size. For example, the white block might be the correct choice.

The child who can make mediated verbal responses—in effect coaching himself by saying, "Look for the size of the block"—has no problem with the reversal shift. Accordingly, children over 7 are adept at reversal shifts. Preschoolers do better at nonreversal shifts because part of their earlier responses are still adequate: half the large blocks are the right color. Among kindergartners, fast learners—who tend to be proficient verbally and, therefore, good at verbal mediation—learn to perform reversal shifts more rapidly than their slower-learning peers. The difference between kindergarten and first-grade children suggests that in the period between ages 5 and 7 verbal mediation is developing into an effective cognitive tool for problem solving.

While verbal facility clearly seems to improve the child's cognitive ability, it has not been proven that language is essential for the child to think and solve problems. Such nonverbal mediators as pictures, symbols, and images serve deaf children—who have poor verbal skills—as well as words serve other children (Furth, 1964, 1971; Youniss 1964). (For a full discussion of the relationship between language and cognition, see Chapter 8.)

Though the mediating symbols used by deaf children are unknown, their performance in reversal shifts indicates that they have some sort of effective nonverbal symbolic system to guide them. Thus, rather than being the sole means of thinking and solving problems, verbal mediation seems to be one means among at least two that the child can use. The child who cannot use words as mediators may be falling back on a more basic method of representation.

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In mediated generalization, the child may apply the same label to two or more objects and, consequently, react to the objects in the same way. For example, the 4-year-old child has learned to apply the word "candy" to certain stimuli. Because candy stands for something good to eat he is apt to behave in a predictable way toward all things he labels candy. When

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an adult introduces a new object the child has never seen and says, "Have a piece of candy," the child will transfer the behavior he has learned for the word candy to this novel stimulus. In all probability he will take this new object and pop it into his mouth. Thus, mediated generalization is usually adaptive and allows the child to behave appropriately to new stimuli on first contact.

A number of excellent experimental studies suggest that verbal mediation is of major importance in learning and problem-solving. In transposition experiments, children learn to make choices on the basis of the *relationships* among stimuli rather than on the basis of their absolute qualities, e.g., rewards are given for choosing the largest of three black squares. Later these children are presented with three new squares, the smallest of them being exactly the same size as the largest (rewarded) one in the previous trials. Young children, with limited language ability, find it very difficult to "transpose"—that is, to learn to choose in terms of the *relative* sizes of the new stimuli. Instead, they continue, for many trials, to select the square that had been associated with rewards earlier, although it is the smallest—incorrect and unrewarded—stimulus in this phase of the experiment (46). Kindergarten children can tell themselves "It is the largest one," and respond accordingly, regardless of the absolute magnitude of the stimuli. In other words, they can use words (verbal mediators) and can thus learn transposition or relational problems without difficulty.

Reversal Shifts. A child capable of using verbal mediators and abstracting can perform successfully in reversal learning or reversal-shift problems (40–44). In these problems, he must learn to switch his responses, to do the opposite of what he has done previously in the same situation. The task involves a simple discrimination, e.g., discovering which of two different squares varying both in size (large and small) and color (black and white) is correct and brings the reward (a marble). The subject is consistently reinforced or rewarded only for choosing in terms of one dimension. Thus, if size is the relevant dimension, choosing the larger of two squares, regardless of its color, will bring a reward. (Color would be irrelevant and must be ignored.) After learning this discrimination, the child is presented with a new problem: he must make a reversal shift and choose the *small* rather than the *large* square to obtain a reward. In another kind of shift, a nonreversal shift, the subject would be required to choose what was previously the irrelevant dimension—that is, to make his choice on the basis of color (black or white) rather than of size.

If children can make mediated verbal responses—if they can say something like "the size is what's important,"—they find it relatively easy to learn this reversal shift. Many nursery school children do not give themselves verbal instructions and have difficulty with reversal shifts; nonreversal shifts are easier for them. Children over 7 make reversal shifts easily, but only about half of the children of kindergarten age do. Among the latter, fast learners (who probably have greater verbal facility and are more advanced in using

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verbal mediation) achieve reversal shifts more easily than slow learners, who presumably have less verbal ability (41–43). These findings suggest that ages 5 to 7 may be an extremely important transition period during which verbal mediation is becoming a powerful process in problem-solving. Some children progress more rapidly than others in the use of verbal mediators in solving difficult problems such as reversal shifts (40, 41).

It seems clear that children with verbal ability can use some form of language in solving cognitive problems. Undoubtedly, verbal ability can enhance cognitive functioning. But, despite these findings, we cannot state conclusively that language is a *necessary* condition for thought and problem-solution. For some children, other kinds of mediators, such as imagery, pictorial representations, or nonverbal symbols, may serve the same purpose that labels or other linguistic symbols do for verbal children. Thus, deaf children who are deficient in verbal skills can solve transposition problems readily (20, 21), and there are no differences between hearing and deaf children in their performance on reversal shift problems (68). While the kinds of symbols used by the deaf are not known, "successful performance on these tasks (e.g., reversal shift) by deaf persons implies an *efficient functioning of a symbolic system other than verbal*" (20, 160, italics ours). In short, symbols and particular words may be mediators of choice in thinking and problem-solving, but they are not the only possible ones. "Versatile creatures that we are, other symbolic means are apparently exploited when language is denied us, as with the young deaf" (19).

41. Kendler, 1962
46. Kuenne, 1946
40.-43. Kendler, 1962, 1964, 1964, 1967
20. Furth, 1964
21. Furth, 1966
68. Youniss, 1964

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LANGUAGE: ACQUIRED DISTINCTIONS. Many psychologists maintain that as children in the 4- to-7 age group acquire language, their new-found ability to label things promotes recognition of the distinctions between objects. The labeling of these distinctions—the attributes of objects—enables the child to focus his attention better on the distinctions and to compare objects according to their "acquired distinctions." For example, the different names applied to a couch and a chair—though they are similar in many respects and different primarily in size—help the child recognize these two objects as different. Similarly, the ability to label groups of trees as either "groves" or "forests" provides experience in integrating the parts of a stimulus into larger meanings or wholes.

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Acquired Distinctiveness. The acquisition of language—which we shall discuss at length shortly—helps in the process of learning that things have different distinctive features, unique characteristics or combinations of characteristics that differentiate them from other things.

The fact that objects are given distinctive names facilitates their being perceived as separate and different from each other. Because a sink and a stove, although both white and shiny, are called by different names, they are perceived as different. *Stimuli become more distinctive when specific language labels are applied to them.* Once the child learns the words "red" and "pink," he is more likely to notice (i.e., perceive) the differences between red and pink material or different sunsets than if he had learned another word or only one of them. Through learning, labels become attached to differentiated aspects of sensory experience. This learning predisposes the child to attend to the attributes to which the labels refer. These two basic principles of perceptual development—*differentiation of stimuli* and *attaching language labels to specific stimuli*—are associated with three more specific perceptual processes that develop during the preschool and early school years.

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The latest Stanford-Binet test, an American version, includes measures of information and past learning, verbal ability, perception, motor coordination, memory, and logical reasoning. In the 1960 revision of the test that is administered to 6-year-olds, the child is asked to count nine

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blocks; to point out the path through a maze; to tell the ways in which a dog and a bird, or wood and glass, differ; to define six or more words including such words as *gown* or *orange*; and to recognize the missing parts in pictures of a rabbit and a shoe.

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The final form of the Stanford-Binet includes a wide variety of items including measures of information and past learning, verbal ability, perceptual-motor coordination, memory, perception, and logical reasoning.

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For example, at the sixth-year level in the 1960 revision of the test, the child must define at least six words, such as orange, envelope, and puddle; state the differences between a bird and a dog, a slipper and a boot; recognize parts that are missing in pictures of a wagon, a shoe, a rabbit; count up to nine blocks; and trace the correct path through a maze. (For sample test items at an earlier age level, see pp. 307-308.)

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The WISC Intelligence Test

Though it is not as well known to laymen as the Stanford-Binet, the Wechsler Intelligence Scale for Children (WISC) is frequently used to test the intelligence of children between the ages of 5 and 15. Unlike the Stanford-Binet, the WISC uses the same items for children of all ages. More significantly, it has separate tests for verbal and performance skills. The WISC's five verbal tests measure reasoning, mathematical ability, ability in making comparisons, vocabulary, general knowledge, and common-sense judgments. The tests of performance include understanding of depicted scenes, basic copying, puzzles, detecting the missing parts of pictures, and building blocks into complex designs that stress spatial relationships.

The WISC differs from the Stanford-Binet in another way. It ignores the child's mental age in computing I.Q. Instead, it compares the child's test score with that of others in the same age group. To see how a child stands in relation to his peers, the examiner must consult the specially prepared WISC tables of I.Q. If, for example, a child of 6 receives an I.Q. of 81, he has scored above about 10 percent of his age peers, while the other 90 percent have scored above him.

While the two tests clearly differ in the methods of calculating the I.Q., as well as in content and organization, the score a child earns on the Stanford-Binet and the score he earns on the WISC often correlate very closely. Psychologists tend to use the Binet more frequently with children between 3 and 6 and then employ the WISC for children up to 12.

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Next to the Binet, the Wechsler Intelligence Scale for Children, or WISC (68), is probably the most frequently used test for older children. The IQ's for children from 5 through 15 years may be derived from this test. While, on the Binet, children are given different items at the various age levels, on the WISC the items are the same for children of all ages. Also on the WISC, mental age is not used in deriving an IQ. Instead, the child's performance is compared with that of other children in his own age group. His IQ is merely a function of his percentile rank in comparison with his peers. To illustrate, let us say that a child of 6 obtains a WISC IQ of 79. This simply means (if one consults the appropriate table in the WISC manual) that this child has done better on the test than about 10 percent of 6-year-olds in the standardization group and less well than about 90 percent.

The most important difference between the Binet and WISC is that the latter has special tests for verbal in contrast to perceptual organization skills (often called performance tests). Thus, the child's score on five language tests yields a *Verbal Scale IQ*. Similarly, the score for five perceptual organization tests allows the psychologist to compute a *Performance Scale IQ*. The five verbal tests measure general information, comprehension of judg-

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ment regarding everyday situations, vocabulary, arithmetic skills, and reasoning. The perceptual organization and performance tests include various puzzles, speed of performance on a simple copying task, comprehension of pictorial representations of situations, construction of complex designs from blocks (which requires conceptualization of spatial relationships), and recognition of missing elements in pictures. One of the advantages of the WISC over the Binet is that the child's differential ability in verbal and nonverbal areas can be assessed objectively.

Despite the differences in test items and method of computing the IQ, Binet and WISC IQ's tend to be highly correlated (*48*). In general the WISC is somewhat easier to administer and score (see Fig. 11.12) than the Binet. At present, the Binet is used more frequently for younger children (ages 3–6), and the WISC for older children (ages 7–12).

Group Tests

Although, as a general rule, the WISC is easier to administer and score than the Stanford-Binet, both tests are given to one individual at a time by

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a trained examiner. Group tests, however, can be administered by teachers or even clerks. Since 30 or 40 children can be tested at the same time by the same examiner, the tests also are more economical and take less time to administer to large numbers of students. But as indicators of future performance, they are not as reliable as individually administered tests. Reliance upon group test scores has frequently led to false assessments of mental ability and, consequently, misplacement in "track" classes or general misunderstanding of a child's ability. As a result, it is now felt that decisions concerning children who earn exceptionally low scores should await further testing by a trained psychologist. A child's general physical health, as well as other influences, clearly can affect his score and should be examined before other action is taken when a child scores abnormally low.

Group Tests of Intelligence. The intelligence tests described thus far must be individually administered. There are, however, a number of group tests available for use by teachers and others. Such tests have the advantages that they do not require intensive training to administer and they are economical of time.

On the other hand, they also have serious limitations. The results they yield are not so useful for prediction as those from individual tests administered by a skilled clinician. Practical decisions about children who deviate on these tests should not be made without individual follow-up testing by a competent psychologist, together with an investigation of other factors within the individual's life which may be affecting his performance (including his general health and sensory functioning). Too frequently erroneous diagnoses of mental deficiency have been made on the basis of low scores on group intelligence tests.

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The Predictive Value of the I.Q.

From the time Binet first developed the intelligence test, its major function has been to serve as an indicator of the child's future performance. Hence, the practical value of an I.Q. score depends upon its stability. The child who receives a high score on one test should receive a high score on all succeeding tests—otherwise his I.Q. tells us nothing.

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As we noted in Chapter 8, I.Q. tests given to children under 2 years of age are useless as forecasters of performance because the test tasks change from sensorimotor to verbal as the child approaches school age. Although the more verbal tests of later childhood become increasingly more accurate predictors of performance and later childhood scores are substantially predictive of adult I.Q., they never achieve the status of absolute accuracy. When large groups of children between the ages of 6 and 18 were tested repeatedly, over half of one group showed a variation of 15 or more points at some time during the course of the testing; another group showed a variation of as much as 20 points (Honzik, Macfarlane, and Allen 1948).

I.Q. scores have been found to be better predictors of academic success in some areas than in others. In one study of I.Q. and academic performance, the correlation between the child's score on an intelligence test and reading comprehension was .73 (Bond 1940). In the case of I.Q. and history, the correlation dropped to .59. In biology, it dropped to .48. One reason for the poorer correlations is that I.Q. tests measure verbal skills and pay only minimal attention to other abilities. As a result, the correlation between I.Q. and success in fields such as art or a mechanical field is quite low.

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Constancy of the IQ. The practical utility of an intelligence test score will depend partly upon its stability or constancy—that is, upon its capacity for yielding similar scores on future retestings. How confidently can we predict that a child who obtains a superior score at one age will also obtain a comparable score at a later age? It will be recalled that tests given to infants under 2 have little value for the prediction of future intelligence scores. Tests given to older children are more highly predictive.

Table 11.2 shows the correlations between intelligence test scores during the middle-childhood years and at ages 10 and 18. As may be seen, during the middle school years, the correlation between Stanford-Binet test scores given one or two years apart (for example, at ages 8 or 9, and again at 10) is very high (around .90). Moreover, tests given during this period are fairly good predictors of intellectual status in early adulthood (age 18). Nevertheless, despite the fact that the IQ becomes more stable at later ages, we must be cautious in using test scores for predicting the future status of individual children because "the correlations are not sufficiently high so that the possibility of marked changes in the IQ's of individual children is precluded" (24). Repeated testings of a large group of children between the ages of 6 and 18 revealed that the IQ of over half the children "showed a variation of 15 or more points . . . at some time during the school years, and a third group varied as much as 20 points . . ." (24).

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The Usefulness of IQ's. What do we actually know when a child obtains an IQ of, for example, 132 on the Stanford-Binet? At the very least, we know that he can do the items on this test better than 97 percent (see Table 11.1) of the large group of persons of his age on whom the test was standardized. And we know that these items are probably representative of a large variety of tasks commonly met by people in their daily lives. In this sense, the authors of the test feel justified in calling it a measure of *general intelligence*. But how useful is such knowledge? Few teachers, for example, are particularly interested in whether a child can do the particular tasks on the Binet. They want to know if he will be able to do satisfactory work in reading, writing, and arithmetic.

The only way of settling the question is by examination of the actual relationship between IQ and school success. In general, IQ scores have been found to be fairly good predictors of academic performance. One investigator (1), for example, lists the following correlations between the Stanford-Binet Intelligence Test and school grades:

IQ and reading comprehension	.73
IQ and reading speed	.43
IQ and English usage	.59
IQ and history	.59
IQ and biology	.54
IQ and geometry	.48

The fairly high relationship between school success and IQ scores may be partly attributed to the similarity of the kinds of behavior measured in both cases. And, indeed, when it comes to predicting success in less academic fields—such as mechanical trades, music, and art—the intelligence test does a less adequate job.

+24. Honzik, MacFarland & Allen, 1948

++ Bond, 1940

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The Determinants of Change in IQ Score. Children who show large increases in IQ during the early school years tend to be similar in personality and family background to those who have high IQ scores. They work hard in school, obtain good grades, and care about intellectual mastery. Thus, one can use amount of increase in IQ as a rough index of the child's desire to master academic skills.

The major results of investigations on the antecedents and correlates of IQ change can be summarized briefly. The correlation between a child's IQ score at age 6 and his score at age 10 approximates +.70, suggesting that some children show significant changes in intelligence test score between first and fifth grades.

Investigators at the Fels Research Institute have made an analysis of changes in IQ and related these changes to personality variables (30, 63). Their subjects were a group of 140 boys and girls for whom annual IQ scores and behaviorial observations were available. Graphs of the Stanford-Binet IQ scores of these children from ages 3 through 12 showed striking differences among children in the patterns of their scores. Some children's scores remained the same; others decreased; and still others increased. Figure 11.13 illustrates some of the individual curves which were obtained (63).

It may be noted that the scores of Case 64 hover around 90 with very little variation over time. On the other hand, Case 139 dropped steadily from an IQ of 140 at age 3 to an IQ of 110 at age 12. Case 2 gained 50 points during the same period; his IQ rose from 110 to 160. Approximately one-half of the group showed a stable IQ pattern with little change over the 10-year period. The other children showed either increases or decreases in IQ score.

What do these changes mean? Are they related to other aspects of the child's psychological functioning? From the total group of 140, the investigators selected 35 children who showed the greatest increase in IQ during the ages 6 through 10, and 35 children who showed the greatest decrease during these years. Ratings based on behavioral observations of these children at home and school during the first 10 years of their lives were then analyzed. A number of interesting discoveries were made.

Twice as many boys as girls showed large increases in IQ. Boys were more likely to gain in IQ score, whereas girls were more likely to lose in IQ. **Compared with children who decreased in IQ, those who increased were, according to their behavioral ratings, more independent, more competitive, and more verbally aggressive.** While there was no relation between the pattern of IQ changes and the degree of friendliness with age-mates,

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those who gained in IQ worked harder in school, showed a strong desire to master intellectual problems, and were not likely to withdraw from difficult problem situations. Apparently children who attempt to master challenging problems are more likely to show increases in IQ than children who withdraw from such situations (63).

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Personality Variables

In an analysis of changes in I.Q. scores, workers at the Fels Research Institute related such changes to the child's personality (Kagan and Moss 1962). **Children whose I.Q.'s increased with each succeeding test were more independent, more competitive, and more verbally aggressive than others. They also worked harder in school and seemed eager to solve intellectual problems. In fact, this urge to master difficult problems rather than to shy away from them appeared to be a characteristic of the child whose I.Q. rose over the years.**

30. Kagan, Sontag, Baker, Nelson, 1958
33. Kagan and Moss, 1962
63. Sontag, Baker, Nelson, 1958

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Expectations of Success and Actual Performance

In general, the child who expects to succeed is more apt to do so than the child who expects to fail. Motives, expectations, and anxieties appear to be interrelated, and each in turn is related to performance. Thus, the child who is convinced he will fail worries about his anticipated failure and has less motivation to try; the child who is convinced he will succeed is free of anxiety in this area, and his motive for working increases. Often his view of his own potential for success or failure is influenced by how others behave toward him. In one widely known, but much disputed, experiment, all the children in a certain elementary school were given a group intelligence test. Their teachers then were given the names of those children who, on the basis of their scores, were expected to show "unusual" academic growth during the next year. In reality the I.Q.'s of these children were no higher than the I.Q.'s of their classmates. At the end of the year all the children were retested. Those children whose teachers had been told to expect "unusual" growth from them actually did score higher than their peers (Rosenthal 1966). Subsequent research, however, indicates the matter is somewhat more complex than this report suggested.

Interaction of Psychodynamic Factors. Motives, expectancies, and anxiety are intimately related to each other and each is related to quality of cognitive performance. The most important relation ties expectancy of success with motivation to master the task. If expectancy of success remains low, motive strength often becomes weak; if expectancy of success is high, motivational strength may increase (25, 26). In general, the child with a high expectancy of success will perform better on an intellectual task than one whose expectancy of success is low.

A child's IQ may rise if his teacher is led to believe that the child is academically superior. The teacher's greater confidence in the child probably increases the child's expectancy of success which, in turn, increases the quality of his performance on the intelligence test (59). In a provocative experiment, all of the children in a public elementary school were given a group intelligence test which was disguised as a test that predicted which children would show a dramatic growth in academic ability. Each teacher was given the names of a few children who "would show unusual academic development" during the coming school year. Actually, these children were no different in ability from the other children in the class, but the teacher was led to expect that they were of "greater capacity." At the end of the school year, all the children were retested with the same group intelligence test given almost a year earlier.

The children in grades 1 and 2 whose teachers expected them to gain in academic ability showed larger gains in IQ than the other children. This effect did not hold for the older children in grades 3 through 6 (59; see Table 11.3).

The author writes: ". . . if teachers can, then probably healers, parents, spouses, and other ordinary people also can affect the behavior of those with whom they interact by virtue of their expectations of what that behavior will be" (59,. 412).

Expectancy of success, motivation, and quality of performance are interrelated. Thus in one study children 7 to 9 years of age were asked to state whether they could solve mazes and memory tasks of differing difficulty and were later observed in a situation in which observers coded how long each child played with intellectual games and puzzles. The children who had stated that they could solve difficult problems (high expectancy of suc-

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On the other hand, nursery school's effect on the I.Q. and school performance of middle-class children is debatable. It is true that in a study of 5,000 British children, the 224 among them who had gone to nursery school scored higher than their peers on intelligence and educational achievement tests administered when they were 8 years old. However, by 11 years of age, the nursery school alumni had surrendered their higher standing. By age 15, their peers had a slight lead on them (Douglas and Ross 1964).

A recent longitudinal study in England yielded inconclusive but somewhat pessimistic results. The subjects were 224 children who attended nursery school at age 4 and were members of the National Survey of Health and Development, which included more than 5000 subjects. In tests of intelligence and educational performance (measuring attainment as well as ability) given at ages 8, 11, and 15, children who had been at nursery schools made higher scores at age 8 than the average survey child, although the differences were not statistically significant. By the age of 11, however, these children had lost their initial advantage, and by 15 they had actually fallen slightly, although not significantly, behind the other children in the survey (20).

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20. Douglas and Ross, 1964

59. Rosenthal, 1966

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This change of orientation—from adults to peers, with social interaction patterns developing from simple to more complex—has been traced in a number of studies.[1] In her classic study of 42 nursery school children between the ages of 2 and 5, Parten (1932) found that social participation increased with the child's age. She classified and scored the children's play activity according to six categories: unoccupied behavior, solitary play, onlooker behavior (watches, but does not take part in the activity), parallel play (plays alongside rather than with other children, but uses the same toys), associated play (plays with others, sharing toys), and cooperative or organized play (takes part in games such as hide-and-seek). Parten's observations showed that as children grow older, they spend more time in associated and cooperative play and less in idleness, solitary play, and onlooker behavior.

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Parten (54) made detailed records of 20 1-minute observations of 42 nursery school children between the ages of 2 and 5. Social participation during each sample was classified and scored according to six categories: unoccupied behavior, solitary play, onlooker behavior (watches, but does not enter play), parallel play (plays alongside, but not with, other children using the same playthings), associated play (plays with others and shares materials), and cooperative or organized play.

Parallel play, the most rudimentary form of social behavior, was much more characteristic of young preschool children, while older ones participated more frequently in associated or cooperative play. Composite social participation scores were highly correlated with chronological age ($r = +.61$). This indicates that as they grow older, children generally spend more time in social interactions of an associated or cooperative sort and less time in idleness, solitary play, and onlooker behavior.

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Peers as Reinforcers

As studies of age-related behavior in nursery school have demonstrated, children turn more frequently to peers than to adults for attention and approval as they mature and grow in social interaction. Because of this shift, peers become a significant source of positive social reinforcement. Some of the major studies in the area of peer interaction have been conducted by Hartup and his colleagues, whose work we shall examine here. Among other dimensions of peer interaction, their work has described the types of responses that tend to have a reinforcing effect on other children's behavior, the situations in which reinforcing responses occur most frequently, and in which children in a group are most effective in reinforcing another's behavior.

REWARDING ACTIONS AND SITUATIONS. From observations of 3- and 4-year-olds, Charlesworth and Hartup (1967) identified several types of behavior that served to reward or reinforce another child's actions. They included giving positive attention and approval, expressing affection and personal acceptance, submitting to another's demands, and giving tangible objects to other children. Behaviors that met with these reactions tended to be prolonged or repeated, and thereby

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strengthened. The investigators also found that the children who frequently gave such social rewards bestowed them among many peers, and these reinforcing children themselves received reciprocal social rewards. Similar findings have been reported by Kohn (1966) in his study of kindergarten children. These types of positive reinforcement by peers in nursery school seem to be related to certain situations. Charlesworth and Hartup (1967), for example, found that most social rewards occurred during free, dramatic play, rather than during activities that were structured by a teacher or required the children's attention to a project or to the teacher.

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Peers as Agents of Reinforcement

While it is obvious that peers have significant impact on the child's learning, systematic study of peers as agents of reinforcement has only begun relatively recently. The most relevant research has been conducted by Hartup and his colleagues at the University of Minnesota (15, 28–30) and is related to types and frequency of reinforcement by peers and effects of these factors on nursery school children. In one study, four kinds of peer reinforcement were recorded in the natural setting of the nursery school: giving attention and approval; giving affection and personal acceptance; showing submission (passive acceptance, imitation, sharing, accepting another's idea or help); and token-giving (giving tangible, physical rewards such as toys or food spontaneously). Reinforcements were given more frequently during dramatic play than during any other kind of activity, which suggests that "activities which involve attending to a project or an adult do not elicit as large a quantity of social reinforcement from peers" as free activities do (29, 1001). Boys reinforced other boys significantly more often than they did girls, and girls gave more reinforcement to other girls than to boys.

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The investigators also noted a marked increase with age in children's use of reinforcers in their interactions with peers, 4-year-olds reinforcing peers much more frequently than 3-year-olds. Moreover, older children distributed their reinforcement more widely—that is, to a larger number of other children. Reinforcement appeared to be a reciprocal process, for those who gave the most reinforcement also received the most. Giving positive reinforcement is significantly associated with social acceptance and high social status. Popular children give and receive more positive reinforcement than those who are disliked (29, 1022). It may be inferred that nursery school children, especially older ones, are most likely to be influenced by popular peers of the same sex.

15. Charles Worth & Hartup, 1967

29. Hartup

55. Patterson, Littman & Bricker, 1967

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Peers as Models

Although peer reinforcement exerts a strong influence on the child's behavior during the preschool years, the direct imitation, or modeling, of peers seems to have an even greater influence. The effects of peer modeling are more pervasive simply because only the observation of another child is required to initiate a change in the child's behavior—no reinforcement or reward of the child's new behavior is necessary. It has been shown, however, that a behavior is more likely to be imitated if the child observes the model being rewarded for that action. (Later, when we discuss aggressiveness, we shall see that children who observe an aggressor rewarded for his acts will tend to imitate this behavior and become more aggressive themselves.) Once the child enters

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nursery school or other groups, he is surrounded by a variety of peers who serve as models, of both desirable and undesirable behavior.

In the realm of behavior regarded as socially positive, Hartup found that children become more altruistic when exposed to an altruistic model (1967). In this study, the subject watched a model solve some simple puzzles and receive six trinkets as a prize for each correct solution. The model then deposited the prizes in two boxes, one the model's, the other belonging to another boy in the class. The model always put five in the other boy's box. After finishing, the model left the room. The subject then played the game by himself, and his altruism—as measured by how many trinkets he put in the other boy's box—was indexed. It was found that the subjects who observed the model were significantly more altruistic than the control subjects who had not watched the model.

Hartup also noted, in this same study, that the amount of sharing a child (subject) imitated depended on two other factors: his past experience with reinforcement from the group, and his past experience with the model. If a child usually received reinforcement from his peers, he imitated a rewarding peer. On the other hand, if the child generally received little reinforcement from other children, he imitated nonrewarding peers.

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Peers as Models

Perhaps even more important than their roles as agents of reinforcement is the peers' ready availability to serve as *models* whose behavior will be imitated. Peer aggression is likely to be imitated by nursery school children. An experimental group of nursery school children was shown a film in which a peer makes many aggressive responses, such as hitting an inflated plastic doll with a bat, throwing plastic balls at a doll, striking the doll with a mallet or punching it in the nose (32).

Following exposure to the film, each subject was subjected to a mildly frustrating experience and then taken to an experimental room, which contained a variety of play materials, some of which could be used for imitative aggression. The subject's imitation score was the number of his responses that were identical with those made by the peer model in the film.

Analysis of the data revealed that exposure to aggressive peer models was an important antecedent in determining the subsequent form of the child's behavior, boys showing more direct imitation than girls. The power of peer models is further attested to by the finding that adult models of aggressive responses were not emulated as frequently as peer models (32).

The level of more positive social behavior may also be elevated by imitating peers. Exposure to an altruistic model will result in increases in the child's altruistic responses. A most relevant experimental study dealt with modeling itself, and (1) the possible differential effects of rewarding and nonrewarding models and (2) the child's history of reinforcement from peers (30).

Extensive observations of the nursery school subjects interacting with other children yielded data on the frequencies of their being "givers" or "receivers" of reward from peers. Some children became confederates of the experimenters, serving as models. Some of these were frequent givers of reward, others were relatively nonrewarding.

In the actual modeling situation, the subject watches the model solv-

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ing some simple maze puzzles and receiving six trinkets as a prize for each correct solution. The trinkets could then be deposited in either of two bowls on the table, one designated as the subject's, and the other designated as belonging to another boy in the class. The model always put five of the trinkets in the "other" boy's bowl. After the model had finished his turn, he left the room, and the subject played the game himself. His altruism was indexed by the number of trinkets he gave the other boy.

Subjects who observed the model were significantly more altruistic and sharing than control subjects who were not exposed to a model (30). Moreover,

> the amount of imitative sharing depended on the child's past experience in the group and his past experience with the particular child who was the model. Children who had a history of frequent reinforcement from their peers imitated a *rewarding* child significantly more than a child who was not usually a source of reinforcement in nursery school. On the other hand, children who received generally little reinforcement from their peers in nursery school imitated *nonrewarding* models significantly more than rewarding models.

Thus, there is evidence to suggest that the determinants of peer imitation include the child's previous experience with reinforcement from other children. Apparently, not all children choose to imitate peers who have been attentive and supportive. On the contrary, nonparticipating, noninteracting children are more influenced by other children with whom they have had little or no experience. These findings indicate, then, that the kinds of interactions a child has with other children in the nursery school have far-reaching effects on his responsiveness to social influence (28, 226).

32. Hicks, 1965
30. Hartup & Coates, 196
28. Hartup, 1967

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The culture in which the child is being reared naturally plays a part in the development, or lack of development, of competitive behavior. If, as it is in this country, competitiveness is extolled, encouraged, and rewarded, the child naturally will think of this quality as desirable. There are, however, some cultures where rivalry is discouraged, and clearly different attitudes are produced. The Zuñi and Hopi Indians of the American Southwest, for instance, display little, if any, competitive behavior, and value, instead, cooperative group activity (Honigmann 1954). The competitive drive found so widely in Western cultures appears to be a learned one. The time and rate of development of this drive in children has been associated with a number of variables: age, home background, and socioeconomic level.

VARIABLES AFFECTING COMPETITIVENESS. Competitiveness in young children tends to increase steadily with the child's age between the years of 2 and 7. In one classic experiment testing the age-dependency of this behavior, children from 2 to 7 were paired with agemates, and, one pair at a time, they were seated opposite each other at a table of construction blocks. They were allowed to play freely for a while, and then they were challenged to build something bigger or taller or better than their partner's. The 2-year-olds showed no competitive behavior and played with the blocks mostly in a random manner. Response to the challenge to compete began between the ages of 3 and 4, and the children from 4 to 7 were

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the loudest, most aggressive, and most hostile in their competitiveness. The percentages of the subjects in each age group who engaged in competition rose from about 40 percent at ages 3 to 4, to almost 100 percent at age 7 (Greenberg 1932).

The same study, however, also noted wide individual differences in competitiveness among the children. Some never competed at all, others competed quite violently, and others were moderate in their competitive actions. It would seem that other factors in addition to age have some influence on a child's competitiveness. Later studies show that home environment, sex of the child, and socioeconomic status exert some influence.

High competitiveness has been found more often in democratic homes rather than more restrictive, authoritarian ones. And the less competitive children tended to be those who got along well with their brothers and sisters (Baldwin 1948). Another study showed that sex and socioeconomic status can be correlated with a child's degree of competitiveness. As in the Greenberg study, pairs of nursery school children were led into a playroom where they found two piles of blocks and were encouraged to compete in building. This time all competitive and aggressive responses, including verbal responses, were recorded. The data showed the following: Not only did the older children compete more than the younger, but those from the lower middle class competed more than those from the upper middle class group, and boys competed more than girls. It might be concluded that sex stereotyping of competitiveness had already taken place; that is, both sexes had learned that highly competitive behavior is regarded as appropriate for males only. Also, there is the implication that children from the lower-middle status were encouraged in their homes toward more competition than were those from the higher-middle status.

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Competition

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In our competition-oriented culture, excelling others and striving for higher status are frequently and consistently rewarded at home and in school. Hence, as the child becomes increasingly socialized, and as he identifies more strongly with his parents and others in his society, he adopts the socially approved competitive values. Many of the conflicts that occur during the preschool years may be related to the growth of competitive responses.

In one classic study of competition (27), children between 3 and 7 years of age were brought into a room in pairs and seated opposite each other at a table on which there was a pile of blocks. After playing and

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building freely for awhile, they were challenged to compete, to build something "prettier" and something "bigger" than their companion.

Figure 10.2, taken from data of this study, shows the increase which occurs with age in the percentage of children exhibiting competitive responses (e.g., grabbing blocks or making competitive remarks). Two-year-olds did not compete and made only "undirected, nonspecific" movements toward the materials. Competitive responses began between the ages of 3 and 4, when the children became more aware of the material, and, more significantly, of the social relationships with their companions. Competition became much more intense between the ages of 4 and 6, when grabbing materials from the other child, disregarding his feelings, and making self-flattering remarks increased, and giving materials or help to the companion decreased (27).

There are, of course, wide individual variations in competitiveness among children within our own culture. Some youngsters are highly and violently competitive; others are only mildly and calmly so; still others do not seem to be competitive at all (27). Nursery school children from democratic, freedom-giving homes tended to be both more outgoing and more rivalrous than those from authoritarian homes (7, 8). Children who got along well with their siblings were less rivalrous than others.

Sex and socioeconomic status are also related to competition among youngsters of this age (49). Nursery school children were brought in pairs to a playroom in which there were two piles of toy construction blocks, and all their competitive and aggressive responses, including verbalizations, were re-

corded. The data revealed that there were more instances of competition among older than among younger children, those from the lower-middle class competed more than those from the upper-middle group, and boys competed more than girls. It may be inferred that the lower-middle-class children had been rewarded by their parents for competition, while the upper-middle parents of this group discouraged competition in play. Apparently, masculine sex-typing, even at this age, includes learning to be more highly competitive, while feminine sex-typing does not include this characteristic. Competition and hostile aggression were not closely related, i.e., highly competitive children were not necessarily highly aggressive (49).

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The role of cultural rewards in the development of rivalry may be clarified by comparing Americans' attitudes with those of individuals from societies in which competition is discouraged. For the American,

> self-esteem has become conditioned to excelling. Excelling is a secondary (learned) drive in his personality. On the other hand, in the village of the Zuni, the ideal man "sees his activities in those of the group" and avoids both leadership as well as the competitive execution of tasks. Asch has several times been quoted as observing Hopi children to consistently belittle their own work. . . . Apparently the Zuni and Hopi modal personality lacks an acquired motivation of competitiveness (34, 190).

Despite the general approval in our society, an overemphasis on competition may be damaging to the child and to those with whom he associates. For example, competition may be unhealthy "if the child's own estimate of himself and of his worth is tied to the extent to which he can outdo others. It is unhealthy if the child has a tendency to regard himself as contemptible and inferior unless ne can prove his superiority to all comers" (36, 226).

27. Greenberg, 1932
7, 8. Baldwin, 1948, 1949
49. McKee & Leader, 1955
34. Honigman, 1954
36. Jersild, 1954

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As we have seen in the studies of reinforcement, if a trait receives peer reinforcement, that trait tends to remain and to become, possibly, even stronger than before. Aggressive behavior seems to be highly susceptible to peer reinforcement. When children give in to or retreat before an aggressor, they strengthen this behavior in him. One study of children in two nursery schools recorded a total of 2,583 aggressive acts and their consequences. The investigators found that very often the children gave in to an aggressor—gave him what he wanted, complied with his demands—which had the pronounced effect of reinforcing such aggression and making it virtually certain he would try the same tactics again (Patterson, Littman, and Bricker 1967).

Results of this study pointed also, quite understandably, toward a kind of contagion in aggressive behavior. If a child repeatedly finds himself to be a victim, sooner or later he may decide to strike back; in other words, a child who initially does not engage in aggressive acts may begin to do so—and may continue if he finds his new behavior successful. There were some children in this experiment, however, who did not acquire any aggressive habits at all; they were those who remained apart from the group and did not interact very often with the others. These findings would seem to support many parents' complaint that their children become more aggressive when they enter nursery school.

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Most significant and most directly related to the problem of influence of peer reinforcements was the finding that reinforcement was generally followed by continuation of the responses that were reinforced. In other words, the child tended to continue—and presumably to strengthen—the activities he was engaged in when he received reinforcement from peers. Clearly, then, peers' reactions to the child's behavior will be an important determinant of whether he maintains or changes his behavior.

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This brings us to the problem of the kinds of behavior peers are likely to reinforce and thus strengthen. Recent research seems to support many parents' contention (or complaint) that their children become more assertive and aggressive after they attend nursery school. In one intensive investigation, full data on a total of 2583 aggressive acts (bodily attack, attack with an object, invasion of territory) and their consequences were recorded in the natural settings of two nursery schools (55).

The most striking finding of the study is that in both nursery schools, aggressive behavior was frequently and strongly reinforced by other children who yielded to the aggressor's wishes, withdrawing from the conflict, thereby permitting him to attain what he wanted, or giving him something (e.g., a toy, a place in line). Consequently, "it is unlikely that the nursery school setting will provide a basis for the *extinction* of aggressive behaviors for children who enter the school with these behaviors already at high strength" (55, 20).

Very often the victim of aggression himself provided the positive reinforcement for the aggressor's actions. This reinforcement increased the probability that the victim would soon be attacked again by the same peer using the same kind of aggressive techniques. On the basis of this finding the investigators concluded that the "social setting provided substantial support for the maintenance of already existing assertive-aggressive behaviors" (55, 22).

Moreover, and perhaps even more interesting, the nursery school setting clearly "provided an extremely efficient program for training in the *acquisition* of assertive behavior" (55, 22). Children who were passive or only moderately aggressive when they entered the nursery school became more aggressive during the period of their attendance there if they interacted frequently with their peers. Passive children who participated in social activities were at first frequent victims of aggression, but eventually they counterattacked, and their counterattacks were reinforced. Subsequently, they began to initiate assertive-aggressive actions and increased their output of these responses significantly. Children who were originally passive and, in addition, socially inactive ("bumps on a log"; "wallflowers") did not show significant increases in aggressive initiations. Some other passive children who did interact but were unsuccessful in their counterattacks against aggressive peers did not become significantly more aggressive. In short, peer reinforcements may result in substantial changes in this important aspect of the child's personality, but the extent of peer impact is mediated by the child's past history and personality.

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55. Patterson, Littman & Bricker, 1967

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Effects of Nursery School Attendance

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Nursery school is generally regarded as a social situation in which the child's personality and social development, rather than intellectual or cognitive learning, is the primary focus. In most schools the child is guided in learning to adjust to others, to the extent that this is necessary for rewarding interaction, but he also is encouraged to maintain his own freedom as an individual in the group (Jersild and Fite 1939). Nursery school usually is the child's first regular experience with a group of children his own age, and, therefore, is his introduction to the influence of peers. Also, the nursery school teacher may be the child's first adult model other than his parents.

Immediate Effects on Adjustment

The objectives of nursery school experience have not usually been stated in cognitive terms but rather in terms of personal and social adjustment. Nursery school is viewed as "a social situation that will constitute a real learning situation resulting in learning to adjust and conform to others as well as maintaining [one's] own freedom as an individual in a group" (37). Furthermore, "successful adjustment to the social situation may be considered one of the tool subjects in nursery school" (37). Most workers in the field agree that the basic aims of the nursery school include increasing the "general security" of the child, promoting his personal adjustment, and enhancing his social relations (4). In many cases, the nursery school affords the child his first contact with groups of peers and thus marks the beginning of peer influences.

37. Jersild and Fite, 1939.

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Both Positive and Negative Effects

Experience in a nursery school group has been found to have certain immediate beneficial effects, such as making a child more outgoing and more adaptable socially, more independent, self-reliant, and self-expressive, and more curious about the world around him. On the less positive side, however, some studies indicate that these benefits are short-lived and may not be attributable to nursery school attendance at all. And, as we have just seen, the imitation and reinforcement of the generally undesirable quality of aggressiveness frequently occurs in nursery schools. As we shall see, there are unresolved discrepancies, both in the research and in the attitudes of parents and teachers, concerning how much of a child's apparent advancement in nursery school is actually gained there, or how much would have occurred even if he had not been attending the school.

Finding true "control" subjects is one of the greatest obstacles in this area of research. Although studies of the effects of nursery school attendance can match the school and nonschool subjects for age, intelligence score, and socioeconomic status, other variables such as differences in temperament or home environment are difficult to control and may be responsible to some degree for differences in behavior between the two groups. The very fact that a child has been enrolled in nursery school, for example, may indicate significant differences, in both personality and parental interactions, between him and a child who is kept at home. Furthermore, the child who is sent to nursery school may be there because his parents hope the experience will help correct a certain behavior problem, such as an inability to play with others, either because of extreme shyness or excessive aggression.

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A word of caution in interpreting the studies seems appropriate. Many of the studies compare children who attend nursery school with those who do not. In general the groups are matched with respect to a number of important variables such as age, intelligence, and socioeconomic status. But there are probably other important factors—for example, parental attitudes and the child's personality characteristics—on which the two groups cannot be matched. These factors may be intimately related to whether the child goes to nursery school at all, and to whether his behavior changes as a result. Therefore, observed differences between children attending and those not attending nursery school may not be attributable so much to the variable of attendance as to differences in the family backgrounds and children's personalities.

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IMMEDIATE POSITIVE EFFECTS. A number of studies seem to confirm the expectation that nursery school attendance will foster good social and personality adjustment. Babyish behavior may be eliminated and more independent behavior developed in the period of a year (Kawin and Hoefer 1931). Inhibitions and nervous tendencies such as tenseness and enuresis may be reduced, although the underlying anxiety will most likely remain (Hattwick 1936; Kawin and Hoefer 1931).

One early study found that children in a nursery school made greater gains in social and personality development than did a control group who were not in school. The subjects and controls were similar in age, intelligence, physical development, and socioeconomic background. Both groups were rated on the same behavior items when the nursery school children began their first term, and the ratings were repeated six months later. Results showed that after only these six months, the nursery school children outranked the control children in spontaneity, general socialization, initiative, self-assertion, self-reliance, curiosity, and interest in their environment (Walsh 1931). The investigator concluded that these developments were probably a result of the "social force of a large group of children who had to adjust to each other constantly" (Walsh 1931).

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Rapid, positive modifications in personality characteristics have also been noted. In one of the earliest studies of the problem, 22 nursery school children were compared with 21 youngsters matched in age, intelligence, physical development, and socioeconomic background, who did not attend nursery school. All were rated on a series of behavior items at the beginning of the school year and again six months later (64).

During the intervening period, the nursery school children became less inhibited, more spontaneous, and more socialized. They gained more than the other children in initiative, independence, self-assertion, self-reliance, curiosity, and interest in the environment. According to the investigator, these changes are "probably due to the influence of the social force of a large group of children who had to adjust to each other constantly" (64, 72).

A great many "undesirable" infantile and dependent habits may be eliminated and an even greater number of "desirable" habits—many of them indicative of emancipation from adults—may be acquired during a year of nursery school attendance (41). Nursery school experience seems to facilitate social adjustment and the development of improved routine habits, at the same time reducing social inhibitions, nervous tendencies, and maladaptive reactions such as avoiding strangers, shrinking from notice, giving in easily, tenseness, enuresis, leaving tasks incomplete, and dawdling with food (31, 41). According to the data of one study, however, preschool training probably does not affect the degree of underlying anxiety, for "emotional" behaviors—such as "cries easily," twitching, sulking, temper tantrums—occur with equal frequency among children with little and with extensive nursery school experience. The author concluded that "the influence of nursery school may be greater for social behavior and routine adjustment than for emotional traits per se" (31, 188).

64. Walsh, 1931

41. Kawin & Hoefer, 1931

31. Hattwick, 1936

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LONG-TERM EFFECTS. While some evidence exists that nursery school attendance facilitates social adjustment, there seems to be no evidence that these observed gains endure over a long period of time. In kindergarten and elementary school, for example, the nursery school graduate does not seem to have any particular advantages. In fact, the opposite has been shown to be true—though, once again, variables other than the actual preschool attendance may be playing a part.

One study of kindergarten children showed that those who had attended nursery school experienced more difficulties with social adjustment—which nursery school is supposed to foster—than did those who had not attended nursery school. The investigators point out, however, that their finding may not be so reliable as it appears. It is possible, they suggest, that the nursery school children were less well-adjusted originally than the others. Their nursery school attendance, then, would not be the only variable related to their observed social difficulties (Brown and Hunt 1961).

There is another point to consider in this brief look at the later success, or lack of success, of the child who attends nursery school—the probability that kindergartens and elementary schools may stress and try to develop rather different qualities and attitudes from those the nursery school encouraged in the child. For example, the freedom and spontaneity so valued in some nursery schools may not be so highly regarded by some kindergartens and elementary schools; indeed, the teacher in a highly structured and traditionally rigid elementary school may value conformity and compliance above all else.

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Long-Term Effects

Are the generally beneficial effects of nursery school attendance enduring ones? Research, using different techniques and different populations, has again, yielded equivocal results. In general, it may be concluded that nursery school attendance may foster the development of certain characteristics associated with good personal and social adjustment, but there is no evidence that these characteristics persist or remain stable.

For example, one study of the emotional adjustment of kindergarten children used 42 *pairs* of children as subjects. In each pair, drawn from the same class, one of the children had attended nursery school for at least a year, the other had not. The pairs were matched for social status, sex, ordinal position in the family, and IQ.

Teachers rated all of the children on four graphic rating scales: adjustment to usual kindergarten routines and activities; adjustment to peers; adjustment to authority (in routine relations with the teacher); and personal or "inner" adjustment, characterizing the child "as a person."

According to these ratings, children who had *not* attended nursery school surpassed those who had attended in personal adjustment, relations with other children, and participation in group activities. The investigators therefore concluded that there is no support for "the hypothesis that nursery school attendance will enhance later school adjustment" (*12*, 592).

It is not simple to account for these negative results, but some plausible explanations may be offered. Nursery school attendance may result in a kind of independence, freedom, and spontaneity that makes it difficult for youngsters to adjust to the greater conformity pressures of the kindergarten class. Or perhaps the redundancy of nursery school and kindergarten activities produces frustration, boredom, and consequently primitivization (regression) of the child's behavior, especially in the cases of brighter children—and the subjects of this study were highly intelligent. Moreover, it is possible that those who attended nursery school were more maladjusted originally. Perhaps more "problem" children are sent to these schools because their parents encounter difficulties in rearing such children at home and feel that perhaps nursery school will help solve their difficulties.

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12. Brown & Hunt, 1961

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At least one study has shown that the degree to which the teacher interacts with the children can have a decided effect on their progress. To investigate this effect, Thompson (1944) observed and rated two groups of 4-year-olds who were attending two nursery schools with different policies regarding the teacher's role in the classroom. The children were matched in intelligence, socioeconomic status, and general personality characteristics, as judged by their teachers.

The teachers for Group A were instructed to remain somewhat apart and to leave the children on their own as much as possible, while still expressing interest and understanding when approached by the children. In Group B, the teachers participated more actively and more warmly. They guided and helped the children, made more suggestions, and supplied materials in a constructive manner. At the end of the eight-month experiment, the two groups differed in many aspects of their behavior. Group B (in which the teacher participated more actively) excelled Group A (in which there was little teacher guidance) in constructiveness when faced with possible failure, in assertive behavior, in social participation, and in leadership. Fewer nervous habits were evident in Group B, although the difference here was not significant. Thompson concluded that the favorable changes in Group B may have been due to the more active guidance and participation of their teacher.

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Influences of Different Nursery School Atmospheres

It should be pointed out that the nursery schools involved in the above studies very likely constituted a select sample of well-conducted schools with professionally trained personnel. Unfortunately, not all nursery schools are of this level. A well-designed experimental study shows how the impact of nursery school attendance on the child's personality and social adjustment varies with the general atmosphere, teaching techniques, and programs of the school (63). The investigator studied two groups of 4-year-olds—equated in IQ, socioeconomic status, and general personality characteristics (as judged by teachers)—who had different kinds of nursery school experiences. With one group of 12 subjects, the teachers were understanding and interested but somewhat detached, allowing the children to plan their own activities and assisting them only when they specifically requested help. With the other group, 11 subjects, these same teachers were warm, friendly, and cooperative, maintaining a great deal of personal contact with the children, guiding their activities, and spontaneously giving help and information.

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After eight months of nursery school experience, the children who had a great deal of teacher guidance improved more in personal and social adjustment, became more dominant, and participated more actively in social relationships than the others. They were also less hostile, rejecting, persecuting, threatening, attacking, and destructive. Frequent warm, friendly interactions with teachers also fostered more leadership and greater constructiveness when the children were faced with possible failure, and a lower incidence of nervous habits. In short, from the points of view of the preschool child's social and emotional adjustment, active teacher guidance and participation are more beneficial than detachment. The favorable changes in children's behavior following nursery school training, noted in the studies cited above, may be attributable to the "high teacher guidance, active participation" qualities of the school they attended.

63. Thompson, 1944

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THE TEACHER'S THERAPEUTIC ROLE. In addition to the nursery school teacher's major role in the child's socialization, some experiments suggest that she also can play an important therapeutic role. It has been shown that the nursery school teacher can modify certain undesirable behaviors and strengthen positive ones through the judicious use of techniques such as reinforcement, or behavior therapy, and by giving a child special instruction in practical or social skills.

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Some of the problems of social behavior that a teacher may be able to treat include low-frustration tolerance, too little self-direction, and excessively passive behavior, or, on the other hand, very dominating behavior with an accompanying lack of cooperation. For example, a highly individualized system of rewarding cooperative behavior or gradual approximations of it, and withholding rewards when the child is very dominating, could bring these two behaviors into a more constructive balance.

Special training and instruction in practical skills, and in social responses, also can help a child to modify his behavior. Keister (1938) succeeded in raising the level of frustration-tolerance, or persistence in the face of difficulty and possible failure, in a group of nursery school children by means of a series of special training sessions. In another experiment, children who were extremely submissive in play were given special training in certain skills they appeared to lack. After these play skills were mastered, the children showed an increase in self-confidence. Once their self-confidence was raised, their self-direction and dominance also increased (Jack 1934). Conversely, it has been shown that the behavior of children who are too dominant can be modified so that more cooperation can be elicited from them (Chittenden 1942).

The Chittenden study selected children who were very domineering, who were inclined to use force and threats in social situations. Each child took part in eleven 15-minute doll-play sessions with the experimenter. The dolls represented preschoolers in social situations similar to ones in which the child displayed very dominant behavior. By discussing, questioning, and playing out with the child various scenes of potential conflict, the experimenter helped the child to see that more cooperative responses were possible and encouraged him to resolve some of the frictional difficulties himself. It was found that these children did become more cooperative and considerably less dominant in a negative fashion.

The Nursery School Teacher as "Therapist"

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Simply attending nursery school and participating in routine activities will not ordinarily solve a child's deep-lying emotional problems or diminish well-established anxieties or their manifestations. But there is an impressive, growing body of evidence that indicates that *individualized* treatment by the nursery school teacher may have some startling effects, reducing maladaptive reactions and strengthening desirable responses. Essentially the "treatment" consists of application of the principles of learning (rewarding certain responses and failing to reward others) in planned, systematic ways. In theory, this kind of "treatment" can be carried out by the nursery school teacher. In practice, however, this may be extremely difficult to accomplish because nursery school teachers are generally overworked and there are numerous, relentless demands on their time and energy which are incompatible with highly "individualized" work.

In one type of treatment the child is given special "training" from which he learns new responses that are to be substituted for established, undesirable habits. For example, after observing a large group of nursery school children, one investigator selected 12 subjects (the experimental group) who showed withdrawal and regressive response to failure in problem-solving situations (e.g., retreating or giving up almost at once, crying, whining, sulking). Each was given special training designed to teach him "to persist longer in the face of tasks that were difficult for him, to depend less on an adult for help in solving a problem, and to attack a problem and see it through with some composure" (42, 34). The control group of 12 children, who gave slightly less evidence of immaturity, received no special training.

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During a 16-week training period, the experimenter met with each child in the experimental group in individual sessions lasting between 8 and 33 minutes, until the child was able to finish the training tasks (e.g., completing picture puzzles of progressively increasing complexity). No direct assistance was given during these sessions, but independent behavior was praised by statements such as "That was fine! You are learning to try hard. . . . You did that one all by yourself" *(42)*. In addition to this, the experimenter occasionally gave encouragement or suggestions for problem solutions.

Although the level or difficulty of the tasks increased regularly as training progressed, the subjects showed continuous gains in independence and interest in the problems, requesting help less frequently and persisting longer in the more difficult tasks. Spontaneous verbalizations by the subjects also revealed increased self-confidence and ability to sustain effort.

After completion of the training, the children were tested again in difficult problem-solving tasks. The trained group made significantly more constructive reactions and "attempts to solve alone" than they had before training. They asked for assistance less frequently and manifested no exaggerated emotional responses such as crying, yelling, whining, sulking, or destructive behavior. In short, the composed, mature, independent responses learned in training generalized to other problem situations. The group who had no special training did not show any significant improvement in handling frustration *(43)*.

The study just summarized shows how "frustration tolerance" may be increased through a series of specialized, individual training sessions. Submissive-withdrawal behavior may be reduced, while dominating and cooperative behavior may be increased by analogous means. In one experiment, *pairs* of nursery school children were observed playing with a sandbox and toys in an experimental room, and all dominant reactions were recorded.

Nursery school behavior records revealed that the 6 children who were most self-directed and dominant in the experimental situations were generally self-confident, while the 6 who were least dominant lacked this characteristic. The investigator, therefore, reasoned that building up the child's confidence might raise his dominance level. To test this hypothesis, she chose the 5 most submissive children as an experimental group and gave them special training designed to increase self-confidence. This consisted of a series of individual training sessions in which the subject was taught all the knowledge and skills necessary to master three difficult tasks. A control group, 5 other submissive children, did not receive any special training.

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Following these sessions, each child was observed in four pairings—each time with a different, originally more dominant child—in situations resembling those used in training. In these interactions, the trained children were more dominant than their companions (taking the lead in instructing them, demonstrating the use of materials, etc.).

About 10 weeks after the initial tests were made, the trained children were again paired with peers in the original experimental situation. They showed significantly greater gains in dominance than untrained children did, 4 of the 5 showing marked changes. The dominance scores of the control group did not change significantly between the initial and final experimental tests (35).

These findings support the investigator's hypothesis that a child may gain in dominant behavior if his self-confidence is elevated. Moreover, this increase in confidence may transfer from the immediate situation in which the new learning occurs to other settings.

Just as submissive children can be trained to be more dominant, extremely dominating children can readily be trained to become more cooperative. In one training program which consisted of eleven 15-minute doll-play periods, the child and the experimenter discussed and analyzed several situations involving social difficulties or conflicts, attempting to decide upon the most desirable ways of resolving the problems. Occasionally the child was asked to work out a solution by himself.

After the training period, the dominating behavior of trained children was considerably diminished, and they made more cooperative responses. On the other hand, the behavior of a control group of equally dominating children was essentially unchanged. The decrease of domination in the trained group—which was maintained for at least a month—was not accompanied by either an increase in submission or a decrease in general social participation. Apparently, socially desirable behavior can be fostered without restricting the child's social activity or his ability to maintain his standing with his peers. Children can be helped to become more cooperative without becoming victims of the domination of others (76).

16. Chittenden, 1942
35. Jack, 1934
43. Keister, 1938

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Applying the principles of "behavior therapy," a nursery school teacher may serve as a "therapist" in cases of problem children with complex symptoms, as the following case study (2) demonstrates. The subject was a 4-year-old pupil at a university nursery school where she was in a group of 8 boys and 8 girls, homogeneous in age, intelligence, and family background (upper middle class).

> During the first days of school, Ann interacted freely with adults but seldom initiated contact with children or responded to their attempts to play with her. She did not seem severely withdrawn or frightened; instead she revealed a varied repertory of unusually well-developed physical and mental skills that drew the interested attention of adults but failed to gain the companionship of children. Teachers gave warm recognition to her skilled climbing, jumping, and riding; her creative use of paints and clay; her original songs and rhythmic interpretations of musical selections; her collections of nature objects; her perceptive and mature verbalizations; and her will and thorough help-with-cleanup behaviors.
>
> With passing days she complained at length about minute or invisible bumps and abrasions. She often spoke in breathy tones at levels so low that it was difficult to understand what she said. . . . She spent increasing time simply standing and looking. Frequently she retired to a make-believe bed in a packing box in the play yard to "sleep" for several minutes. Mild, tic-like behaviors such as picking her lower lip, pulling a strand of hair, or fingering her cheek were apparent (2, 512).

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353 A more complex problem of social behavior was shown to respond well to the regular use of reinforcement techniques. Ann, a 4-year-old in a

354 university nursery school, seldom played with any of the other children in the first days of school, even though she interacted freely with adults. Although she was competent mentally and physically, and was similar in age, intelligence, and family background to the others in the class, she tended to isolate herself from her peers. Gradually, she began to exhibit more serious problems. She complained of imaginary cuts and bruises, spoke in low, barely audible tones, and spent more and more of her time alone, standing apart and watching the other children. She also developed habits such as picking her lip and twisting a strand of hair.

Clearly, for many complicated reasons, Ann wanted to isolate herself. To reduce Ann's tendencies to isolate herself from the other children and to seek adult attention, and simultaneously, to foster peer interactions, the investigators instituted a plan in which the teacher rewarded her with maximum attention whenever she played with another child. At the same time, she did not reward her isolated behavior or interactions with an adult alone, but tried to extinguish these responses by withdrawing attention when they occurred.

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Meticulous observations of Ann's behavior were made throughout the study, beginning with a 5-day period before training procedures began. During this "baseline" period, she spent little more than 10 percent of her nursery school time interacting with children, about 40 percent with adults, and for at least half of the time she was essentially alone, either quiet, or playing by herself (see Fig. 10.1).

During the training procedures,

> the teacher made comments and directed other attending behaviors to Ann, not individually, but as a participant in the ongoing group play; whenever possible, the adult approached the group prepared to give Ann an appropriate material or toy to add to the joint play project. A sample amended operation was, "You three girls have a cozy house! Here are some more cups, Ann, for your tea party." Whenever Ann began to leave the group, the teacher turned away from her and became occupied with some other child or with equipment. This procedure, which extended over 6 days, seemed to bring Ann into interaction with other children more frequently and for longer periods (2, 514).

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On the first day of training, there was an immediate change in Ann's behavior. As Fig. 10.1 shows, she spent almost 60 percent of her time that day first in "approximations to interaction" and then in active play with other children, while adult-child interactions, which were not rewarded, decreased to less than 20 percent. These levels of interaction were maintained, with little variation, throughout the 6-day training period.

Then, to test the effects of reinforcement, the procedures were reversed after the sixth day of the training period. Beginning on this day, solitary pursuits and interactions with adults were rewarded by adult attention, while interactions with children were disregarded and ignored. Under these conditions, Ann's previous behavior reappeared immediately (see Fig. 10.1), and for the 5 days of the "reversal" period, she averaged less than 20 percent of her time in interaction with children and about 40 percent with adults.

After 5 "reversal" days, a final shift was made. Adult attention and reward again became contingent upon interaction with children. The change in Ann's behavior was dramatic and immediate. For this final reinforcement period of 9 days, interactions with adults decreased to about 25 percent of the total session, and interactions with children rose to about 60 percent.

Checks on Ann's behavior 6 days after the last reinforcements had been given and at intervals after this time showed that Ann's behavior was fairly stable. She spent about 60 percent of her time with children and less than 15 percent in interaction with adults. Moreover, according to teachers' reports, her complaining, babyish behavior disappeared. In general, she seemed to become a happy, confident, sociable member of the school group.

Although this is a study of a single case, it points up the efficacy of basic reinforcement techniques applied by nursery school teachers in the course of their regular professional work in modifying complex "problem" behavior.

> The teacher then returned to her therapeutic training for nine more days; this produced a dramatic and lasting improvement in Ann's interaction with peers. Ann's baseline percentages of interaction had been 50 percent isolated play, 40 percent with adults, and 10 percent with other children. At the end of the program she was spending 60 percent of her time with other children, 25 percent alone, and only 15 percent with adults (Allen et al. 1964). This case indicates that techniques of reinforcement can effectively treat quite difficult behavior problems. Success is partly dependent, however, upon providing adequate time for the generally overworked nursery school teacher to focus closely on one of her 15 to 30 pupils over an extended period.

2. Allen et al, 1964

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Fear

One of the emotions that children, especially boys, may be taught to hide or disguise is fear. [redacted] that the danger is recognized. The terms *fear* and *anxiety*, frequently used interchangeably, actually denote two emotions or feelings that are related, but have different qualities. Both are unpleasant. A specific fear—such as a fear of the dark—may be a prominent part of anxiety, but generally, anxiety is a more diffuse, free-floating, and subjective feeling that is expressed in a variety of ways. Fear is considered to be a localized response to an objective danger; a fear reaction is usually specific and directly associated with a particular stimulus or class of stimuli. Nevertheless, fear is a complex term, denoting feelings ranging from terror to quiet withdrawal.

Essential for survival in both primitive and modern life, fear provides the needed energy in a time of danger, moving a person out of the way of fierce animals or speeding automobiles. At the same time, fear can provide an impetus for learning—learning what the fierce animal is like and

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what can be done about him, or learning about traffic rules. However, if a fear continues too long or becomes too intense or generalized, remaining with the child long after the objective stimulus has disappeared, then it can become destructive. Fear can impair the child's ability to see and deal with his environment effectively.

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FEAR AND ANXIETY

Everyone sometimes experiences fear and anxiety in one form or another, and in varying degrees. The distinction between these emotions is not clear-cut. Both involve a pattern of physiological and psychological reactions, including unpleasant and stressful feelings and emotions. Both are anticipatory internal responses—basically anticipations of danger or of an unpleasant event, feeling or reaction.

Fear is generally considered the more specific emotion, a response to particular, specifiable objects and stimuli such as fast-moving vehicles or wild animals. Anxiety, a more diffuse, unfocused, and less clearly perceived emotional state, differs from fear primarily in its "free-floating" quality—its lack of objective or realistic foci characteristic of fears of, say, moving vehicles and uncaged wild animals. However, as Erikson points out, it is difficult to maintain a rigorous distinction or differentiation between fear and anxiety, particularly in the case of young children, because young children do not differentiate between inner and outer, real and imagined dangers (21).

From a clinician's perspective,

> anxiety is not a pathological condition in itself but a necessary and normal physiological and mental preparation for danger. . . . [redacted] . . . Further, . . . anxiety can serve the highest aims of man (26, 11).

In terms of learning theory, stimuli capable of eliciting anxiety are those that were present on previous occasions when strong feelings of fear were elicited. Later, thinking about the fear-evoking event leads to anticipation of the unpleasant feelings that were associated with it originally. Furthermore, as we learned earlier, certain other antecedent conditions, e.g., uncertainty about the future and inability to cope with strange stimuli (see pp. 268–269), may also elicit anxiety.

Preschool Children's Fears

Every child learns a variety of fears or sources of anxiety. Some of these serve a "self-preservation" function—that is, fears attached to certain kinds of stimuli (e.g., highways, fierce animals, dangerous tools, moving automobiles) motivate effective avoidance responses. Moreover, fears may serve as a basis for learning new responses. For example, fear of speeding cars can motivate the child to learn the rules of crossing streets—the appropriate place and the signals to be observed. Fear of wild animals or natural events, such as thunderstorms, may stimulate the child's interest in learning more about nature and about natural science.

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But extensive, overly intense, and very frequent fear reactions (e.g., crying, retreating, withdrawing, cringing, trembling, protesting, appealing for help, cowering, clinging to parents) are incompatible with stable or constructive behavior. If the child is to achieve adequate emotional adjustment, many of these responses must be replaced by mature, purposeful reactions to stimuli that previously elicited fear.

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The Learning of Fears. One conclusion to be drawn from the studies above is that a child may drop some fears and acquire new ones as he matures emotionally and cognitively. It is now generally held that most, if not all, fears are learned. This was not always so—fears at one time were regarded as instinctive. According to Hagman (1932), most fears are not only learned but also are

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learned in the home and from the mother, through identification or observation. Fear of dogs, insects, and storms, especially, have been shown to be acquired this way. Sometimes a fear also can be traced to a specific event; a child who is afraid of the water may have had an early frightening experience associated with water.

Wide individual differences among children in the number and kinds of fears they have are attributable to a number of variables. Girls seem more susceptible than boys—or, at least, they admit their fears more. And the physically disabled are more fearful than the healthy. The home environment, of course, plays an important role; one child may learn at home to be enormously frightened of a particular stimulus, but his friend may be completely unmoved by the same stimulus.

In the early years there is a relationship between the number of fears a child has and his I.Q. One study showed a positive correlation between number of fears and I.Q. between ages 2 and 3, but the correlation declined to zero by age 5 (Jersild and Holmes 1935). This finding would seem to reinforce others that relate fear to the child's maturing intellectual abilities. A young child who is more advanced intellectually may perceive fear of danger in a situation where a less advanced child does not see it, but later he may develop the understanding or skill to cope with the situation, or, at the later age, may be concealing his fear.

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Intelligence may also influence the acquisition of fear. Among children between the ages of 2 and 5, the number of fears displayed correlated positively with IQ, the relationship being most marked at the youngest age levels (24 to 35 months of age). A significantly higher proportion of girls than of boys show fear responses (*42, 43, 44*). Apparently intelligent children are able to recognize "potential danger" more readily than duller ones, have livelier imaginations, and probably think and reflect more about dangers.

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Relationships Between Mothers' and Children's Fears

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Most fears are acquired, and since the young child's most important learning occurs in the home, it is not surprising to find that there is a marked tendency for a child to adopt his mother's fears. This is most clear in the cases of fears of dogs, insects, and storms (*28*).

The parent's fears are acquired by the child through identification or observational learning. Moreover, if the mother herself is afraid of an object or event, she cannot do anything to make it less fear-provoking for her child. Consequently, he continues to fear this stimulus and to make avoidance and withdrawal responses which may be tension-reducing in the sense of removing him from the object of his fear. This is reinforcing, and the responses tend to be repeated, thus preventing the learning of new, more mature reactions. For these reasons, fears which the child shares with his mother are particularly resistant to treatment and extinction.

28. Hagman, 1932

42. Jersild & Holmes, 1935

43. Jersild & Holmes, 1935

44. Jersild & Holmes, 1935-6

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Anxiety

Unlike fear, anxiety is usually a more diffuse feeling and its causes are more subjective and hidden. It is, however, like fear in its inevitability and its potential for constructive as well as for destructive functioning. A moderate amount of anxiety, such as most people experience before an exam or a performance, can lead to action that is creative, inventive, and problem-solving. A large amount can nearly immobilize a person, making achievement difficult, if not impossible.

Inner conflict is a source of anxiety for young children, who often are filled with conflicting impulses. Some of the conflicts that children from 4 to 7 typically feel are the desire to be dependent on the parents and the desire to be independent of them; a feeling of anger against a parent who is loved; a desire to gain approval by complying and an impulse toward noncompliant self-assertion. All of these and many other incompatible feelings arise from the clash between the child's own impulses and the demands and restraints that are imposed from outside and are becoming a part of his own conscience. Conflicts are inevitable and normal, and the child usually develops some technique of coping with them. There is, of course, potential for trouble as well, as we shall see.

ANTECEDENTS OF ANXIETY. Early parent–child relationships provide soil for the growth of anxieties that often can be quite severe and regular in occurrence. Some antecedents of anxiety, according to clinical observation, are punishment and restrictions that are overly severe; the imposition of standards of behavior that are too high for the child; unfavorable and harsh judgments of the child's behavior and achievements; and quick and inconsistent changes of mood and reactions to the child by the parents (Kessler 1966; Ruebush 1963).

For example, it has been postulated that the child who is called "test-anxious" is one who has had his adequacy questioned in his home (Sarason et al. 1960). The same researchers present data suggesting that children's anxieties are "the result of a complex interaction between the parental threat of negative evaluation of the child's per-

360 formance and the child's conflicting feelings of aggression toward his parents and his need to be dependent on them" (Sarason et al. 1960). The authors conclude that the anxious child experiences great difficulty in testlike situations, in which he is required to act independently and then be evaluated.

Anxiety and Defense

Like fear, anxiety impels the individual to action of some sort. Minimal anxiety may, and often does, serve constructive purposes, acting as a spur to creativity, problem-solution, and inventive accomplishments; but it may be emotionally crippling—tying the individual in knots, rendering him ineffectual and desperate.

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> The inability to cope with danger may result in a sense of helplessness and inadequacy, in reactions of fright, in neurotic symptoms or in antisocial behavior. Only in such cases can we speak of anxiety as pathological, but it would be more direct to say that the solution or attempt at solution [of his problems or conflicts] was a pathological one (26, 12).

Antecedents of Anxiety

The preschool years seem to be a critical period for the development of anxiety, for every young child has to deal with many sources of anxiety and consequently has numerous opportunities to acquire anxiety reactions. He may become anxious about expressing freely his aggressive, sexual, or dependent feelings. The possible loss or dilution of parental love when a new baby arrives may be perceived as threatening, or the child may become apprehensive about real or imagined rejection by parents or peers.

Intense and frequent anxiety among young children has its roots in early parent-child relationships. According to clinical observations, the significant antecedents are overly severe punishment and restrictions; parental efforts to impose standards of behavior that are too high for the child to attain; harsh negative evaluations of the child's behavior and accomplishments; or inconsistency in parental treatment of the child, together with frequent and intense changes in mood and in reactions to the children (49, 64).

Seymour Sarason and his colleagues at Yale University have conducted the most systematic work on the antecedents and correlates of anxiety in young children (66). The subjects were primary school children and the child's anxiety was assessed by means of a questionnaire dealing primarily with reactions to taking tests in school. It consisted of items such as, "Are you afraid of the teacher asking you questions about how much you have learned in school?" "Does your heart begin to beat faster when the teacher calls on you?" The test is valid and scores on it are positively correlated with teachers' ratings of anxiety, with tests of general anxiety, and with children's manifest anxiety in interviews and other kinds of situations (64).

Sarason and his colleagues did not study preschool children, and their method of testing probably limits the extent to which their findings can be generalized. Nevertheless, many of their findings are directly relevant for understanding anxiety in preschoolers. They present convincing data that

children's anxieties are "the result of a complex interaction between the parental threat of negative evaluation of the child's performance and the child's conflicting feelings of aggression toward his parents and his needs to be dependent upon them" (66 190). The anxious child experiences his greatest difficulties in situations which he views as evaluative—that is, situations in which he is required to act independently. Moreover, interviews revealed that mothers of highly anxious children, in contrast to the other mothers, responded to and evaluated the child's behavior not in terms of his capabilities or his own needs but in terms of the mother's own standards and values. The child cannot fulfill the mother's demand, and his failures "result in experiencing negative evaluations and the development of a derogatory self-image" (66, 232).

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26. Frai burg, 1959
49. Kessler, 1966
66. Sarason, 1960
64. Ruebush, 1963

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EFFECTS ON BEHAVIOR. Effects of anxiety on behavior in children between infancy and school age have not been studied extensively. However, the work that has been conducted on social behavior indicates that high-anxiety situations, such as being in a strange room, provoke an increase in proximity-seeking and other dependency behaviors (Rosenthal 1967). This correlation between high anxiety and dependency behavior has been found to be stronger in nursery school boys than in girls of the same age, and regression in play activities is a further characteristic of boys' behavior under high-anxiety conditions (Ruebush 1963).

In the area of cognitive behavior, the effects of anxiety are more complex. It has been found, for example, that anxiety can aid the learning process if the task is a simple one. If the task is difficult, however, anxiety seems to interfere with learning. One study comparing the effects of anxiety on verbal learning (a relatively complex type of learning) with its effects on classical conditioning (a simple type of learning) illustrates this relationship.

In this study the subjects were older students who were under stress because of certain conditions in their lives. Some of them were waiting to take oral exams, some were about to take part in a dramatic production in a university theater, and others were waiting to give oral reports in class. During this period of anxiety, each subject was asked to learn a list of nonsense syllables and to take part in a conditioned learning experiment. After all of the subjects' stressful situations were concluded, they then learned another list of nonsense syllables and participated in another conditioning experiment. Results showed that the verbal learning of the nonsense syllables was impaired by stress, but the conditioned learning was improved. The investigators concluded that stress is an impediment to difficult learning and an impetus to simple learning (Beam 1955).

Anxiety, therefore, is more apt to have a negative effect on the child's performance as he advances in school, because schoolwork becomes more verbal and complex in higher grades. This expectation was shown to be accurate by a longitudinal study in which high anxiety scores became increasingly correlated with low intellectual and school performance as the subjects advanced in school (Hill and Sarason 1966).

There are certain individual, personal variables, however, which contribute to the effects of high anxiety on the learning and performance of complex verbal tasks. For example, a person with high academic aptitude may perform better in a highly stressful situation, but a person of low aptitude for verbal learning may be hampered by stress (Katahn 1966). Furthermore, high anxiety can aid verbal learning in a person whose need for achievement is high, but low stress has been found to be more beneficial for persons with a low need for achievement (Schmeidler et al. 1965).

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Behavioral Correlates of Anxiety

The pervasive effects of anxiety in preschool children are evident in social behavior and in cognitive functioning. It is difficult to assess the degree of a preschool child's anxiety objectively. Investigators generally use criteria such as teachers' ratings, observations of the child's reactions in the classroom or in situational tests (e.g., in a strange or new setting). Thus, in one study, high levels of anxiety among nursery school children, as judged by their responses in a strange new room, were found to be associated with frequent dependency reactions of both active (attention- and help-seeking) and passive (touching, clinging) forms, the relationship being greater for boys than for girls (35). Anxious boys give evidence of inadequacy and insecurity in their social play activities, and they prefer immature games (64, 501).

The effects of anxiety on learning and other cognitive processes have been investigated extensively, usually with school children as subjects. However, the general conclusions from these studies—very briefly summarized here—are probably applicable to nursery school children.

Anxiety may facilitate learning if the learning task is simple and a well-established response (or responses) is correct. But if the task is complex and difficult and/or previously learned responses are incorrect, anxiety interferes with learning. In verbal learning tasks, highly anxious children tend to make more irrelevant, and even interfering responses than children low in anxiety, and the effect is most marked in the case of difficult problems.

> In general, the findings from . . . studies [of anxiety in relation to problem-solving processes] show that anxiety tends to impair children's performance on verbal tasks. Anxiety has been found to impair certain speech characteristics, such as voice quality, voice comprehensibility and the like, as well as the use of abstract concepts (64, 499).

Since school learning tasks and assignments generally become more difficult and require more ability to abstract as the child advances through school, anxiety is more likely to hinder academic achievement in the higher grades than in the primary ones. This is exactly what Sarason and his colleagues found in a longitudinal study: "Over time, anxiety scores become increasingly and negatively related to indices of intellectual and academic performance" (36, 57).

35. Heathers, 1935
64. Ruebush, 1963
36. Hill & Sarason, 1966

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Defense Mechanisms

Since anxiety feelings are unpleasant and painful—often too much to bear—human beings learn ways either to handle or to defend against them, in order to reduce the pain and unpleasantness. The techniques used to accomplish this are called *defense mechanisms*. As the name indicates, this behavior is the opposite of an offensive strategy; in fact, it is more akin to retreat. When a child, for instance, blames another child for what is really his own fault, he is using a defense mechanism. He is retreating from or defending himself against a reality about himself that would be so painful to him that he does not wish to, or cannot, face it. Everyone has, and uses, such mechanisms.

Although preschool children use a variety of defense mechanisms, it is not until children reach the concrete operational stage (8 to 9 years old) that they seem able to recognize and understand the causality between their emotions and their actions, especially defensive responses. The emergence of this ability will be discussed in Chapter 12.

Whether defense mechanisms are constructive or destructive in their functioning depends on how they are used by the individual. First, the extent to which the individual uses them is im-

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portant. Defense mechanisms usually involve distortion of some part of reality, but if not used too frequently, they may have an adaptive function; that is, they may assist the child in meeting some of life's vicissitudes and adapting to the world. The withdrawal response, for example, may be useful in removing the child from a situation that threatens him. He may withdraw and hide in his room when a congregation of strange relatives arrives to celebrate his birthday. If used pervasively throughout the child's behavior, however, defense mechanisms may remove the child from reality. He may be unable to cope with threatening situations. His defense mechanisms then would be maladaptive; they would operate against his adaptation to the demands of his life. Withdrawal, for instance, would be maladaptive if it became so frequent and automatic a response to anxiety that the child's activity became restricted to a smaller and smaller circle. Each withdrawal brings relief from anxiety, and thus is self-reinforcing. However, it also closes off avenues of growth for the child.

Besides the frequency with which a child uses defense mechanisms, the variety of such mechanisms used also contributes to whether his behavior is adaptive or maladaptive. If the child has a variety of defense responses and uses them with flexibility, in accordance with the demands of each situation, the chances are that his behavior will be adaptive. If, on the other hand, his repertory of responses is limited and he uses these few in a rigid manner—for example, always withdrawing, regardless of the nature of the anxiety or provocation—his defensive behavior is most likely to be inappropriate and maladaptive a large percentage of the time.

ANTECEDENTS. One study attempting to determine the antecedents of frequent and inflexible use of defense mechanisms in boys found a lack of communication between highly defensive boys and their parents. In the homes of boys whose defensive behavior was extreme, there were no open expressions of pleasure, displeasure, or other feelings between the child and his parents. Discussion of sex, death, and other emotionally tinged subjects was either absent or discouraged. The inadequacy of communication seemed to range widely across both emotional and cognitive areas. Even the motivation to communicate fully seemed to be missing in these homes. The investigators concluded that this early failure to communicate and thus alleviate normal anxieties seems to give rise to extremes of defensive behavior in subsequent years (Hill and Sarason 1966).

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Defense Mechanisms

Because anxiety is so stressful and painful, everyone develops techniques of coping with it or defending against it. The *defense mechanisms*—learned responses used to avoid or reduce feelings of anxiety—are commonly used to enable the individual to live reasonably comfortably. Typically the individual is unaware of the presence of the defense, or defense mechanism, which helps him avoid problems that he cannot deal with adaptively.

When a defense is used, some aspect of reality is usually distorted. For example, a child may have provoked a friend's anger by attempting to dominate him. Because it would be anxiety-arousing to admit to himself that he was responsible for what happened, the child may blame the other boy, explaining that "Johnny is a bad boy." In this case, we say that the child has distorted the situation and has *projected* the blame for the social friction onto his friend.

Many children of this age have "imaginary playmates" to whom they turn for solace in times of crisis (e.g., after being punished by a parent). For some children, the playmate is "there," an obvious distortion of reality.

Everyone uses defense mechanisms. But strong dependence on these mechanisms—and their pervasiveness in the individual's behavior—may be associated with frequent and gross distortions of reality and failure to cope adaptively with psychological problems and with the real world. Used in these ways, the defense mechanisms may have consequences that are extremely deleterious for mental health and adequate emotional adjustment.

> In most children, after anxiety takes on its signaling functions, the ego learns to react to this danger signal in various ways which are probably also both constitutionally and environmentally determined. These defensive reactions take many forms and may be utilized flexibly or rigidly. It also seems likely that these early-learned reactions to anxiety are basic determinants of personality and characterological differences in later life. In addition, the defensive maneuvers of an individual may be adaptive or maladaptive in different situations. When the defensive processes available to a particular individual are varied and flexible, the chances are high that they will be adaptive in most situations. But when an individual's defensive structure is rigid and limited, it follows that his defensive reactions will usually not be appropriate to a particular situation and thus will be maladaptive in the sense that they will interfere with adaptive functioning. Such defensive processes are usually labeled symptoms, although we are learning that even where the defenses are not clearly pathological they can still interfere with performance if they are inflexible and inappropriate to the particular task (66, 31–32).

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Hill and Sarason (36) investigated parent-child relationships as antecedents of extreme defensiveness—that is, of frequent, inflexible, overcontrolled use of defense mechanisms. Highly defensive boys do not have adequate communication with their parents about either emotional or cognitive matters. They

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> do not openly indicate their pleasure or displeasure to their mothers; they do not ask questions about sex nor receive information about it; there is a reluctance by the mothers to discuss death; the mothers don't openly show their own feelings toward the boys. The expression of feelings and curiosity about emotionally tinged topics appears to be discouraged by the parents, and the motivation to communicate honestly and fully appears to be interrupted (36, 66).

66. Sarason et al, 1966
36. Hill & Sarason, 1966

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SOME COMMON DEFENSE MECHANISMS. Some of the classical "ego defenses" described by Freud are most easily seen in the behavior of young children because they are used in a less sophisticated form in these early years than they are later.

One of the defenses most often seen in the behavior of preschool children is *withdrawal*. If a situation is perceived as threatening, the child withdraws in some fashion. He may duck his head, or cover his eyes, or actually run off to his room. Although he may wish to face the situation, perhaps play with a group of unfamiliar children, he may refuse to go near them; thereby he avoids a situation he feels might be painful – finding his place in a new group. This response brings its own reward. The child, finding himself safely out of the feared situation as a result of his withdrawal, tends to use the same response again and again. Because he insulates himself in this manner, he may not learn to deal adequately with difficult or stressful situations.

The defense called *denial* is the refusal to acknowledge that an event has happened or that a certain situation exists. The child may maintain stoutly, for example, that his father or his brother or his pet did not die, although he really knows the death occurred and may even have witnessed it. It is almost as if by denying the validity of an event or situation the child hopes to reverse it.

Repression is similar to denial but has a deeper effect. A disturbing event is considered to be repressed when it is blotted out or erased completely from a person's awareness. In repression there is no denial that the event – maybe a family fight – took place because the child does not seem to be aware that it happened at all. He has repressed it, and the event is completely beyond his ability to consciously recall it.

Regression is the retreat to earlier babyish behavior. A child may return to bed-wetting, thumb-sucking, or extreme dependency in the hope that he may thus regain the more comfortable state he associates with such infantile behavior. Retreating to the remembered comforts of infancy may seem infinitely preferable to facing a situation that is threatening or painful. The preschool child often reacts in this manner when a new baby is anticipated or born. He may feel that the baby is displacing him or that his parents now are making too many demands on him to grow up and be more independent. If he behaves more like a baby, he may think, then he will receive the care and attention that his parents are giving the new baby.

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Behavioral withdrawal is one of the most frequently used defenses of preschool children; it is the direct avoidance of, or flight from, threatening situations or people. The child will hide his eyes or run to his room when a stranger enters the house; he will refuse to approach a group of strange children despite his desire to play with them; he will shy away from a jungle gym if he doubts his ability to climb it successfully.

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The withdrawal response temporarily removes the child from the feared situation, but the tendency to withdraw becomes stronger each time the child practices this behavior. This defense is therefore often maladaptive, for the child who refuses to cope with stressful situations may eventually become fearful of all problems and stresses, and may never learn to handle adequately the crises that are inevitable in the course of development.

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In *repression*, the most basic underlying defense, anxiety-producing impulses, memories, and the like are simply kept from conscious awareness. When the individual's associations begin to encroach on such painful areas, anxiety is increased, and the individual's thoughts move off in another direction, with the result that anxiety then decreases. Thus repression as a defense tends to be employed and learned because it is rewarded. The total inability of an individual to recall a particularly painful experience provides one example; the transient block in remembering the name of a familiar person whom one dislikes provides another. In a closely related, but more primitive defense, *denial*, obvious reality factors are treated by the child as if they did not exist; an amusing, if touching, example might be the little girl who while sobbing her heart out, keeps insisting, "I am not unhappy!"

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In denial, the child insists that an anxiety-arousing event or situation is not true, and he believes his denial is accurate. For example, the child who has been openly rejected by his mother may deny that she is hostile, and insist that she is a kind and loving person. Some children who have been rejected by their families deny that these people are their parents. The child insists that he is adopted and that his true parents love him.

When repression is used, the child blots out the anxious or frightening event by removing it completely from awareness. Repression is neither a refusal to remember an event nor a denial of its reality. Rather the thought or event has been removed from consciousness by forces beyond the child's control. For example, the child may repress his memory of a violent argument between his parents or of resentful thoughts he has felt toward one of his parents. Although he was clearly aware of these thoughts at one time, after repression the child is unaware of them, and questioning him will not bring them to light.

There is a subtle distinction between denial and repression. In repression the child has no awareness of the frightening or painful thought (e.g., he cannot recall his parents' heated argument). In denial, the anxiety-arousing thought is denied (e.g., he actively denies having heard the argument).

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Regression is the adoption—or, more accurately, the readoption—of a response that was characteristic of an earlier phase of development. Thumb sucking or bedwetting are examples of regressive behavior in children who have stopped such behavior for some period of time. In regression, the child is attempting to withdraw from a current anxiety-arousing situation to the more gratifying and less anxious state of infancy.

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Regressive behavior frequently occurs when a new baby is brought into the home. Some 4-year-olds are made anxious by the anticipation that a new baby will displace them and obtain the love and attention that they have been receiving. By adopting infantile behaviors they attempt to gain attention and to retain desired parental nurturance.

As already stated, the ultimate function of these and other defense mechanisms is to protect the child from impulses, thoughts, and feelings that would lead to painful anxiety if the child became aware of them.

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Projection is easily and frequently seen in children's behavior. When a child attributes a thought or action to another person, when it actually is his own, he is projecting. This thought or action obviously is unacceptable to him. He cannot "own up to it" without anxiety and so he does not. In fact, the 5-year-old often really believes, "He did it—not me." This quick assignment of blame to someone else, even an imaginary companion, is typical of projection. Often the child displays "rapid-fire" imagination in his projections. For instance, if he overturns his glass of milk, he may tell his mother instantly, in convincing dramatic tones, that his baby sister let the pet rabbit out of its cage and the rabbit hopped onto the table and knocked over the glass. The child's projection is not in the least hampered by the fact that both his sister and the rabbit are sound asleep.

Displacement is the substitution, in the child's mind, of another object, person, or situation for the one actually responsible for his anxiety or fear. If a child fears his father, it may be painful for him to admit this fear to himself, since he also loves him and depends on him. Nevertheless, he does feel fearful of his father. Since he must place the cause of his fear somewhere, he chooses a substitute, which takes on symbolic significance, such as a dog, lion, snake, or monster. The child's response of fear may be appropriate, but he has displaced the emotion to an object that he finds more acceptable to fear than his father.

Reaction formation is an exaggerated display of behavior that is the opposite of an undesirable or taboo behavior the child has very strong impulses to engage in. A child may be reacting against a desire to be messy and dirty if he seems preoccupied with keeping himself spotlessly clean. He may even call attention verbally to his fastidiousness—"Look how clean I am." Or, in another instance, a child with strong feelings of hostility may display such extreme deference and solicitude that his actions seem to declare, "Look how nice I am!" In reaction formation, the true impulses are, for whatever reason, so unacceptable and frightening to the child that he is pushed to extremes of the opposite behavior in order to hide them.

Finally, *rationalization* is a widely used defense often made evident by the introduction, "You know why I did that?" What a child actually does when he engages in rationalization is to offer socially acceptable reasons for some unacceptable behavior. Or, the behavior may be acceptable, but it may have been provoked by reasons that are unacceptable to the child and would, if he admitted them, make him feel quite guilty and anxious. Sometimes rationalization is defined as giving good reasons instead of the real reasons. For example, one child might give another a hard push, then explain he was pushing him out of the way of some danger, doing it, in short, for his own good. And once the explanation has been given and seemingly accepted, the explainer is once again at peace.

The kinds of defense mechanisms a person will use are determined partly by his individual constitution and temperament, his family background, his prior experience, among other variables. There are also developmental and socioeconomic differences in preferences for defense mechanisms. Younger children, as well as the lower socioeconomic groups, show a preference for withdrawal, denial, and aggression, and older persons in the middle class show a preference for reaction formation and rationalizations. Projection and displacement appear to occupy a middle ground between both.

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In *projection* and *displacement*, an unacceptable feeling or impulse is acknowledged, but is attributed to other sources. *Projection* is the ascription of an undesirable thought or action to another person, when, in reality, the thought or action applies to one's self. The child of 5 often projects aggression and blame for misdeeds onto other people. For example, a child may be running after a playmate and in so doing bump into an adult. The child may project (i.e., attempt to place) the blame on the child he was chasing by saying, "He made me chase him. If he didn't make me chase him, I wouldn't have bumped into you." The plea, "He started the fight, Mother, not me," is one of the most common examples of projection in young children.

In *displacement*, the child has the appropriate emotional response, but it is not attributed to its true source, as we shall see in discussing childhood phobias. A child's fear of his father, for example, may be too painful for him to acknowledge, but he *is* fearful, and therefore, he may attribute the fear to an acceptable symbolic substitute for the father (e.g., lions). A little girl's intense fear of snakes, or even perhaps of objects, such as pencils, may conceal her underlying fear of masculine sexuality.

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Reaction formation, as it is termed by psychoanalysts, has already been illustrated in the case of the censor of obscene literature described above. Similarly, the child who is overly preoccupied with being spotlessly clean and tidy may actually be defending himself against strong and unacceptable wishes to be dirty and messy, either literally or symbolically (e.g., sexually). It is as though the child were saying, "I can't have any desire to be messy or dirty, because look how preoccupied I am with being clean." As we shall see, reaction formation frequently plays a role in childhood compulsions.

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Rationalization is a comforting defense that all of us—not only children, but adults as well—engage in. It involves providing one's self with socially acceptable reasons for his behavior or attitudes, when the real reason would not be acceptable to one's conscience, and hence would, if permitted into awareness, lead to painful anxiety and guilt. The parent who harshly punishes his child because of his own intense anger toward the child, but who then says he is "doing it for his [i.e., the child's] own good" is engaging in rationalization.

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The kinds of defenses people are most likely to employ will vary, depending on the individual's personality structure and specific learning experiences. A number of these defense mechanisms are more easily observed in children than in adults, because of the child's relative lack of sophistication and the immaturity of his ego.

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383 In the view of Piaget, the individual, from early childhood through middle childhood (until about age 12), is developing his concept of justice. It changes from an inflexible view of good and bad acts—based on predetermined, and usually literally interpreted, parental codes—to a more rational, thoughtful view based on equity and the particular circumstances of a situation. Tracing this change, a 4-year-old boy, when asked, may regard the act of shouting as bad because of its loudness, whereas an 8- or 9-year-old is likely to realize that there are instances when the prohibition against shouting may be waived.

384 Piaget tested his theories about moral development by asking children such questions as, "Why shouldn't you cheat in a game?" He also told them stories that involved an injustice of some kind, or another moral question. He then carefully studied the response patterns of different age groups and developed categories that characterized the types of morality at different ages.

One type of story that Piaget used involved a conflict between a sense of justice and obedience to parents. Predictably, the youngest children chose obedience to parents most frequently (95 percent at 6 years of age), while the older children—those between 7 and 12—chose obedience to parents less frequently. This result supported the Piagetian view that early conscience tends to be based on prohibitions (usually parental) against specific behaviors, whereas the morality that develops during the later years of childhood is based on internal sanctions and general principles.

Another study also produced significant results on the question of general principles versus specific prohibitions. Piaget asked a group of children between the ages of 6 and 12 what things they thought were unfair. Of children aged 6 to 8, 64 percent cited acts that their parents had prohibited, while only 7 percent in the 9- to 12-year age group did so. By contrast, 73 percent of the 9- to 12-year-olds mentioned inequities in their parents' treatment of them, while only 27 percent of the 6- to 8-year-olds did so. These results are in keeping with a view of morality in which the child's conscience develops out of premoral hedonism (doing whatever one wants to do and can get away with), through a period of reliance upon external rules and sanctions, and then to a period of greater reliance on internal moral principles.

As the earlier example about shouting suggests, the older the child grows, the less his judgments tend to be absolute and authoritarian. Instead, he begins to see that morality is based on the need for harmony between persons rather than conformity to an iron and arbitrary law. He begins to base his morality more on the needs and desires of the group as his interaction in the social world increases. Relativism replaces absolutism. The inviolable quality with which he once regarded rules gives way to a greater maturity in which a rule's value for him depends upon mutual agreement (Piaget 1932).

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385 PIAGET-INSPIRED RESEARCH ON MORAL DEVELOPMENT. Many studies, in addition to Piaget's, have been conducted in the area of moral development. Some have been designed to test Piaget's hypotheses about the stages of moral development. One such study asked boys and girls, aged 2, 5, and 8, what was to be done when one child struck another child (Durkin 1959). Before replying, older children tended to ask for the offender's reason for striking the other child, as well as to inquire about the conditions surrounding the act. The younger children, on the other hand, seldom were concerned with these mitigating factors. Thus, the experiment supported Piaget's generalization that increased concern with intention correlates with age. Other studies of children have supported Piaget's theses about changes in moral judgment (Lerner 1937). Results were found to apply equally well to lower-class and middle-class children. It was found that in older children, fewer suggestions were made that conflicts be solved by acquiescence to adult demand or by obedience to authority.

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509 Piaget believes that from ages 5 to 12 the child's concept of justice passes from a rigid and inflexible notion of right and wrong, learned from his parents, to a sense of equity in moral judgments that takes into account the specific situation in which a moral violation has occurred. For example, the 5-year-old is apt to view lying as bad, regardless of the situation of the circumstances in which it occurs. With increasing age, the child becomes more flexible and realizes that there are exceptions to this strict rule (i.e., that there are some circumstances under which lying may be justifiable; *136*). Piaget's techniques of investigation included conversing with children and asking them questions about moral issues or about the ethics of characters and events in short stories. For instance, in a conversation with a child he would ask, "Why shouldn't you cheat in a game?" Or, after telling a story about a mother who gives the biggest piece of cake to her most obedient child, he would question the subject about the justice of her action.

Piaget's observations suggest that as the child becomes a member of larger, more varied peer groups, rules and moral judgments may become less absolute and authoritarian, and more dependent on the needs and desires of the group. "Moral relativism," based on cooperation and respect for others, eventually replaces "moral realism": "For very young children, a rule is a sacred reality because it is traditional; for the older ones it depends upon a mutual agreement" (*136*, 192). For example, 150 children between the ages of 6 and 12 were told stories involving a conflict between obedience to parents and a sense of justice or equality, and were asked to solve the conflict. The percentage of children who chose solutions involving "obedience to adults" decreased steadily with advancing age. Thus 95 percent of the 6-year-olds favored this type of solution.

In another phase of this investigation, children were asked to give examples of what they regarded as unfair. "Behaviors forbidden by parents" were mentioned by 64 percent of the children between 6 and 8 years of age, but only by 7 percent of those in the 9- to 12-year-old group. On the other hand, inequality in punishment and treatment were mentioned by 73 percent of the 9- to 12-year-olds, but only 27 percent of those 6 to 8 years of age.

On the basis of numerous studies of this sort, Piaget concluded that

> there are three great periods in the development of the sense of justice in the child. One period, lasting up to the age of 7–8 during which justice is subordinated to adult authority; a period contained approximately between 8–11, and which is that of progressive equalitarianism; and finally a period which sets in toward 11–12, and during which purely equalitarian justice is tempered by considerations of equity (136, 314).

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Other investigators have tried to repeat some of Piaget's studies (*44, 45, 106, 119, 176*). For example, in one study, 101 boys and girls in grades 2, 5, and 8 were questioned about the correct thing to do if one child hit a second child (*44*). The older children were more apt than the younger ones to ask for the particular circumstances of the moral violation and the motive for the aggressive act. This finding supports Piaget's hypothesis that the older child views a moral violation in the total context in which it appears and his reaction is influenced by situational factors.

Using both American and Swiss children as subjects, Lerner (*105, 106*) confirmed Piaget's findings regarding age changes in moral judgments, especially among children of a lower socioeconomic status. He found a progressive decline in suggestions for solving conflicts by subordination to adult demands or acceptance of authority (including majority opinion) between the ages of 6 and 13. During the same period, solutions based on moral relativism, reciprocity, and equality increased. Summarizing these changes in moral concepts, Murphy says: "Moral realism yields gradually during childhood to an ethics of reciprocity; what is right is now defined not in terms of self-evident and inherent necessity but in terms of a sense of balance or justice. Rightness is a matter of the mutual consideration of needs" (*128*, 386).

44. Durkin, 1959
45. Durkin, 1959
106. Lerner, 1937
119. MacRae, 1954
176. Strauss, 1954

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The peer group is an important context in which the child learns social skills and behavior. Among other children, he discovers how to relate to people of his age, how to control or express his hostility, how to share his possessions and time, how to lead other children, and how to behave toward another child in a leadership position. In the group, he sometimes can see aspects of himself and realize that his internal emotional reactions—resulting in shyness or hurt feelings—are not peculiar to him. Knowing that his fears and interests are shared by others his age can be a comfort to the child, assuaging his uncertainty about the many aspects of physical development and emotional life that he does not fully understand.

In his peer group the child continues to build his self-concept. It is shaped, in part, from the emotional information he gains when he watches others react to him. For example, he may learn to change his behavior to succeed with his present friends or to win new ones. The peer group is both a refuge and a testing ground for the child beyond the limited sphere of his family. In our discussion of this vital aspect of development, we shall structure our approach on the intensive study of peer groups conducted by Willard W. Hartup.[8]

The peer group also provides an opportunity to learn how to interact with age-mates, how to deal with hostility and dominance, how to relate to a leader, and how to lead others. It also performs a psychotherapeutic function for the child by helping him deal with social problems. Through discussions with peers the child may learn that others share his problems, conflicts, and complex feelings, and this may be reassuring. The discovery that other boys are also angry at their fathers or are concerned with sexuality relieves tension and guilt.

Finally, the peer group helps the child develop a concept of himself. The ways in which peers react to the child, and the bases upon which he is accepted or rejected, give him a clearer, and perhaps more realistic, picture of his assets and liabilities.

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AGE GROUPINGS. Age is still another basis for peer-group divisions. Generally, children in middle childhood have been found to associate almost exclusively with children of the same age (Campbell 1964). However, among prepubertal girls there is a tendency to associate with boys who are slightly older.

Throughout the middle-childhood years, age, as well as sex, plays an important role in determining the nature of peer group relations (*30, 33, 84, 161*). Both boys and girls tend to associate primarily with peers of the same age, although prepubertal girls—with their earlier growth spurt—may begin to express an interest (although a rather tenuous one) in somewhat older boys, in contrast to their "grubby" male contemporaries.

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30. Campbell, 1964

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Self-esteem

Self-esteem, a person's judgment about his own capabilities, talents, and powers, influences much of an individual's behavior—what tasks he is willing to try, how he impresses other people, and what kinds of social relationships he will develop, for example. Coopersmith (1967) has examined this characteristic in children—how it is defined and what factors in the child's environment lead to high and low self-esteem.

Coopersmith describes children with high self-esteem as having a great deal of confidence in their own abilities and judgments. This confidence leads to a certainty in action and a high degree of initiative and assertive behavior in children. They participate actively in group discussions and projects, have little difficulty forming friendships, and express themselves freely even at the risk of attracting negative criticism. Because they are not overly self-conscious, they are able to take leadership and present new positions without worrying about approval. Not being preoccupied with themselves, they can devote more energies to external issues and other people.

The child with low self-esteem presents a different picture. Because he has little confidence in himself, he is wary of expressing his own ideas for fear of being criticized. In groups of children, he is usually very quiet and unlikely to participate for fear of attracting attention, and thus the possibility of negative opinions, toward himself. He is preoccupied with his own problems, and consequently has little time for those of other people. Thus, he does not interact very well with other children and has a hard time forming friendships.

Of course, most people fall between these two poles of self-esteem; but by studying children of these extreme types—very high self-esteem and very low self-esteem—Coopersmith was able to uncover some of the determinants of this trait.

DETERMINANTS OF SELF-ESTEEM. Perhaps the most important determinants of self-esteem are the attitudes and actions of the parents in rearing the child. Coopersmith found that parents of high self-esteem children manifested characteristics which indicated that they themselves were high in self-esteem. They interacted easily with their children and were consistent in their definitions of areas of authority. While they expected a great deal from their children, they were nevertheless encouraging and supportive. These parents expressed respect for their children and were willing to extend themselves into their children's lives and become participants along with them.

In contrast, mothers of children who scored low on measures of self-esteem avoided interaction with their children and participation in their activities. Rather than being supportive of their children, these mothers belittled them and what they did.

While parents of children with high self-esteem were not overly permissive, but always seemed to mete out punishment in a fair and rational manner, the children who were low in self-esteem were treated harshly and inconsistently by their parents. These parents vacillated between alternately expressing little concern over what their children did, or punishing them far in excess of the gravity of their offense, in a seemingly arbitrary fashion.

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What Is Self-Esteem? For purposes of this discussion, "self-esteem is a *personal* judgment of worthiness that is expressed in the attitudes the individual holds toward himself. It is a subjective experience which the individual conveys to others by verbal reports and other overt expressive behavior" (34, 5).

In a study of a large number of preadolescent children attending the public schools of central Connecticut, Coopersmith (34) found marked differences in the experiential worlds and social behaviors of children differing in self-esteem. Children high in their estimation of themselves approached tasks and persons with the expectation that they would be well-received and successful:

> They have confidence in their perceptions and judgments and believe that they can bring their efforts to a favorable resolution. Their favorable self-attitudes lead them to accept their own opinions and place credence and trust in their reactions and conclusions. This permits them to follow their own judgments when there is a difference of opinion and also permits them to consider novel ideas. The trust in self that accompanies feelings of worthiness is likely to provide the conviction that one is correct and the courage to express those convictions. The attitudes and expectations that lead the individual with high self-esteem to greater social independence and creativity also lead him to more assertive and vigorous actions. They are more likely to be participants than listeners in group discussions, they report less difficulty in forming friendships, and they will express opinions even when they know these opinions may meet with a hostile reception. Among the factors that underlie and contribute to these actions are their lack of self-consciousness and their lack of preoccupation with personal problems. Lack of self-consciousness permits them to present their ideas in a full and forthright fashion; lack of self-preoccupation permits them to consider and examine external issues.

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> The picture of the individual with low self-esteem that emerges from these results is markedly different. These persons lack trust in themselves and are apprehensive about expressing unpopular or unusual ideas. They do not wish to expose themselves, anger others, or perform deeds that would attract attention. They are likely to live in the shadows of a social group, listening rather than participating, and preferring the solitude of withdrawal above the interchange of participation. Among the factors that contribute to the withdrawal of those low in self-esteem are their marked self-consciousness and preoccupation with inner problems. This great awareness of themselves distracts them from attending to other persons and issues and is likely to result in a morbid preoccupation with their difficulties. The effect is to limit their social intercourse and thus decrease the possibilities of friendly and supportive relationships (34, 70–71).

What patterns of parental characteristics and behaviors distinguished between children high and low in self-esteem? In general, children with high self-esteem tended to have parents who were also high in self-esteem. These parents, in contrast to parents of children low in self-esteem, also tended to be more emotionally stable and more self-reliant, resilient, and effective in their attitudes and actions regarding child care. Interactions between the parents of high self-esteem children tended to be marked by greater compatibility and ease, with clearer definitions of each parent's areas of authority and responsibility. While these parents tended to have high expectations of their children, they also provided sound models for them and gave their children consistent encouragement and support.

Mothers of children high in self-esteem were more accepting of their children, and, even more importantly, tended to express their acceptance through specific, everyday manifestations of concern, affection, and close rapport. These mothers were likely to express agreement with such statements as "Children would be happier and better behaved if parents would show an interest in their affairs" and "When you do things together, children feel close to you and talk easier"; and to disagree with such statements as "Children should not annoy their parents with the unimportant problems" and "The trouble with giving attention to children's problems is they usually just make up a lot of stories to keep you interested." In contrast, mothers of children low in self-esteem were "more likely to withdraw from their children, and by their inattentive and neglectful treatment to produce a milieu that is physically, emotionally, and intellectually impoverished" (34, 179). Low self-esteem mothers were likely to depreciate their children and to treat them as a burden. Their emotional responses to their children tended to range from hostility to indifference.

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Interestingly, mothers of high self-esteem children were *more* likely to enforce established rules carefully and consistently. They used reward as the preferred mode of affecting behavior, but used straightforward and appropriate punishment rather than harsh treatment or loss of love when some sort of punishment was required (34). The fathers of these boys were usually the ones to administer punishment, although they frequently shared that responsibility with the mother. Furthermore, these punishments tended to be perceived as justifiable by the high self-esteem subjects.

In contrast, lack of parental guidance and relatively harsh and disrespectful treatment of children were characteristic of the parents of children low in self-esteem. Apparently these parents either did not know or did not care to establish and enforce guidelines for their children:

> They are apt to employ punishment rather than reward, and the procedures they do employ lay stress on force and loss of love. The mothers are more likely to administer punishment to these boys, which may have negative connotations and significance for children in this age group. There is an inconsistent and somewhat emotional component in the regulatory behaviors of these parents. They are less concerned, on the one hand, and inclined to employ more drastic procedures, on the other. They propose that punishment is a preferred method of control, yet state that they find it generally ineffective. Their children apparently smart under such a regimen and believe that the control behaviors of their parents are often unwarranted (34, 196–197).

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Effects of Birth Order

425 Along with his relationship to his parents in the family, the child's position with respect to his siblings is important in determining the course of

426 his development. Children who occupy similar role positions within families have been shown to exhibit similar personality traits not only during childhood but throughout life, although this is more true of females than males.

Being the first-born but especially the only child seems to carry with it certain advantages. First-borns tend to be more successful, as is evidenced by their disproportionate number in *Who's Who* (Jones 1954). Their thinking has been reported to reflect the notion that the world is an orderly and rational place (Harris 1964). Finally, these children attain significantly higher scores on achievement tests than do later-borns (Altus 1966).

Why should being the first-born or only child make such a difference? One reason is that first-borns probably have higher standards for their own achievements and competencies than later-borns do, since they have only adult performances to compare themselves with, not those of older siblings. A second, and related, hypothesis is that first-borns identify with, and model themselves after adults rather than other children, again because they have no older siblings with whom to compare themselves. Finally, the first-born is more likely to be exposed to an orderly world. His information comes from a fully developed adult mind which tends to be consistent in its interpretation of the world, while the later-born gains much of his experience from older siblings who are, although older, nevertheless children and interact with the world with the inconsistent thought and impulsive action of children (Sutton-Smith and Rosenberg 1970).

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Kagan (*83*) has recently hypothesized the following sequelae for first-born, in contrast to later-born children.

1. **First-borns have higher standards surrounding competences and attributes that are positively valued by parents and the adult society.** If the parents value academic skills, for example, the first-born will use adult levels of competence as his reference for setting a standard of quality. These standards are likely to be excessively high. The child does not have a clear notion of how "good" he is supposed to be at a task. He must discover this standard and he does so by orienting to his family for a guide as to what level of competence he should try to attain. **If his major experience is with adults, as is likely with first-borns, a higher standard will be set than if the child is exposed to the performance of older children.** The later-born child is exposed to less demanding standards because he can compare himself to his older siblings as well as to his parents. The later-born is therefore likely to be more realistic in his standards.

2. **The first-born has only adult models available to him and he is prone to identify primarily with them and as he grows older to choose older adults as models.** As adults have in fact, more power and competence than children, the first-born child is more likely to pass through a period of intense identification with an adult. The later-born has an older child as an available model and this condition dilutes the later-born's motivation to identify with the adult parental models.

3. **The first-born is more likely to experience an orderly world—he is exposed to coherent and orderly explanations to his questions.** The first-born child usually asks his parents about events that puzzle him and he is likely to get a relatively rational and consistent explanation. **In contrast, consider the situation of a typical second-born.** He is playing with a toy when his older brother suddenly races toward him and grabs at the toy without explanation. A later-born asks his brother why it is raining and receives one answer one time and a different answer on the next occasion. The world should appear less orderly and less predictable; less knowable and less rational for the later-born child. In the extreme, the later-born may develop a picture of a predatory world in which one must vigilantly protect one's possessions against the onslaughts of the unpredictable older sibling.

In view of these three potential influences, generally regarded as "advantages," it is not surprising that a series of investigations (*6, 82, 152*) have yielded the finding that first-born children are more likely to achieve eminence, and are overrepresented in such listings as *Who's Who* (*82*). Moreover, a disproportionate number of first-born children attain very high scores on intelligence and aptitude tests (*3*). As the first-born is also more likely to view the world as a potentially orderly and knowable place, rather than a chaotic jungle where social predators lie waiting at every turn, it is probably more than coincidental that the personality and intellectual ideologies of first- and later-born men tend to be congruent with these presumed attributes (*65*). Freud, for example, tried all his life to construct a theory that would explain all of human behavior. Such an attempt reflects a faith in the possibility of explaining human behavior in one grand scheme. Freud was a first-born boy. As one might expect, so was Einstein.

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3. Altus, 1966
65. Harris, 1964
82. Jone, 1954

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Being a first-born, as distinct from only child, is not, however, entirely advantageous. While he seems more likely than his younger brothers and sisters to have certain cognitive and intellectual advantages, the first-born also tends to have some personality traits which may not be so desirable. For example, first-borns express more fear of physical dangers and active sports (Helmreich and Collins 1967). They tend to be less aggressive than their peers, and have guilt feelings more than others (Cobb 1943; Sears 1951). One study reports that first-borns are more conforming (Becker, Lerner, and Carroll 1966). In addition, they are represented in disproportionately large numbers as patients in child guidance clinics (Rosenow and Whyte 1931), and display more nervous symptoms than children in any other position in the family (Garner and Wenar 1959). Contributing to the development of these characteristics of first-born children may be the fact that parents are often unsure and inconsistent in dealing with their first child. Usually parents have established patterns of behavior by the time their second child arrives and are more consistent in dealing with him.

Youngest children, in contrast to other children, have been characterized as popular and outgoing. They have some of the advantages of being the only children. Middle children show a rather inconsistent profile, appearing in some studies like neglected children but in others highly motivated to overcome this neglect.

How can we account for these kinds of differences in personality and emotional makeup? One factor is that the first-born is subjected to a great deal of anxiety early in life over the loss of parental attention upon the arrival of the sibling. A middle-born and later-born child has never known the status of only child; therefore the birth of another child in the family is not nearly so traumatic for him. Another factor that may account for such differences is that the first-born experiences more guilt over his hostility toward younger siblings than do later-borns over their hostility toward older siblings. The older brother or sister may show real aggression toward his younger rival, thus justifying the younger sibling's feelings of hostility toward him. However, an infant is a rather helpless individual, and the resentment that a jealous older sibling feels toward him cannot easily be justified, and so is more likely to give rise to feelings of guilt.

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While these first three influences are usually regarded as "advantages," Kagan (*83*) postulates two other less positive influences:

4. The first-born is subjected to anxiety over loss of parental attention in a more traumatic way than the later-born child. The first-born becomes accustomed to the exclusive affection of his parents. He is not required to share this resource and he has come to expect a certain level of intense attention. The inevitable attenuation of attention that must occur when the next baby is born represents a dramatic loss for him and he is likely to become highly anxious over it. The later-born enters a world in which he is always sharing his parents with his older siblings and he grows up expecting and accepting this situation. The first-born, therefore, is more vulnerable to anticipated rejection and possible loss of nurturance than later-borns. And because he normally received nurturance from adults, he tends to turn to others for help when he is anxious. In short, he is more likely to be overtly dependent in time of stress if an adult is around on whom he can become dependent.

5. Finally, the first-born is predisposed to experience more guilt over hostility than the later-born. This expectation is based on the assumption that the first-born will be naturally jealous of the new baby and his special status. However, the first-born has no way to rationalize his hostility. He knows and is told repeatedly that babies are entitled to extra attention and his hostility is not appropriate and cannot be justified. The inability to justify his resentment leads to guilt (for he has violated a standard) and self-derogation. The later-born will have an easier time justifying his hostility to his older sibling for the first-born is, in fact, aggressive toward him and does enjoy privileges he does not possess. As the later-born is better able to rationalize his resentment, he is less likely to experience strong guilt over these hostile thoughts.

In view of the latter hypotheses, it is not surprising that research studies of the problem show general agreement that oldest children are likely to be less aggressive and more prone to feelings of guilt than their peers (*28, 58, 92, 167*) and more conforming (*14*). They are also more likely to fear physical harm and to avoid dangerous sports (*71, 72, 133, 134*). Moreover, at least two independent studies show that there are disproportionately large numbers of first-born children among the patients at child guidance clinics (*157, 191*). Surveys of elementary school children also indicate that oldest children manifest more nervous symptoms than either intermediate or youngest children (*57, 92, 181*).

Among normal school children, first-born boys seem to have more problems involving anxiety, withdrawal, mood swings, and oversensitiveness (*51, 92, 118, 181*). They are also more likely than later-born children to respond to anxiety-provoking situations by seeking the support and comfort of others ("affiliative tendency"). In contrast, under nonanxious conditions, first-born children are, if anything, less "sociable" than later-born children (*164*).

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On the average, youngest children seem to present a sharply contrasting picture. Compared with other children, they appear to be highly striving (*92, 151*) and more defiant (*28*). Middle children are generally socially gregarious, rather easily influenced by suggestion, and eager for physical demonstrations of affection (*18*).

14. Becker, Lerner & Carroll, 1966
28. Cobb, 1943
57. Garner & Wenar, 1959
72. Helmreich & Collins, 1967
157. Rosenow & Whyte, 1931
167. Sears, 1951

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426 There are several factors that mitigate the effects of birth position. For example, one study showed that siblings who are close together in age and of the same sex show few differences, while siblings who are farther apart in age and of opposite sexes show a great many differences. This same study also showed that a two- to four-year age difference between siblings is threatening to the older child, who was himself a baby at the ar-

427 rival of the sibling. However, if the older child was 7 or 8 years old when the infant was born, he was already much more independent of his parents and, therefore, less resentful of the sibling (Koch 1956). Unfortunately, many studies do not control adequately for such age-spacing effects nor for the fact that the sex of one's siblings, not just their position, also has an important impact. In general, we become more like our siblings, whether they are males or females. Furthermore, we tend to marry individuals with characteristics like both of our siblings.

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500 *Ordinal Position.* First-born children tend to have stronger consciences than second-borns; they tend to be more responsible, less aggressive, and more intellectually curious. However, the effect of ordinal position is very much dependent on the sex of the siblings and the spacing between them. When siblings were of the same sex and separated by less than 2 years, there were few differences between them. When the spacing increased to 4 years or the sibs were of the opposite sex, behavioral differences between them were more marked. For example, if a boy had a brother 4 years younger, he was less aggressive and more responsible than a boy with a sister 4 years younger than himself.

Spacing. Koch feels that a 2- to 4-year difference between siblings is the most threatening to the older child. If the first-born is 3 years old when

501 the new baby arrives, he is apt to become anxious over possible loss of nurturance. If the first-born is only a year old when the new sib arrives, his self-image is still so diffuse and unclear that he will probably not regard the baby as a major threat or competitor for his mother's affection. If the older child is 7 or 8 when the new sibling arrives, he is much more independent of his parents and is less threatened by the newcomer in the family. Moreover, the older child in this case is more likely than a sibling only 2 years older to become a hero figure or identification model for the younger child.

It appears that sibling position is an important psychological variable because it duplicates, in microcosm, many of the significant social interaction experiences of adolescence and adulthood. To be first or second, to have high or low power, to side with the authority or rebel against it, to feel guilt over hostility, or to be able to "place the blame" are tendencies that begin to be differently strengthened during early childhood as a result of the child's sibling position.

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School Influences

Teacher Behaviors. Children in the middle years spend a major part of their time in school. After the parents, teachers may sometimes be the most significant and influential adults in a child's life. For this reason, the effect of teacher behaviors on personality development has been the subject of a great deal of research. The effects of various kinds of teacher behaviors on the personality of the child are in many ways similar to the effects of parent behaviors. One particular advantage of studying teacher behavior as opposed to parent behavior is that a child normally changes teachers after each school year, whereas the parents remain a constant factor. It is, therefore, possible to follow the same child or group of children from year to year to see to what extent changes in teacher personality effect changes in the personality or behavior of the children.

Heil and Washburne (1961) classified teacher personality types into three categories, and then compared the progress of the children in various areas with different kinds of teachers. The teachers' personality types were: (1) Turbulent. This person is characterized as being independent, impulsive, unpredictable, and lacking in warmth. (2) Self-controlled. This person is generally methodical, pragmatic, calm, and sensitive, but lacking in dynamism. (3) Fearful. This person tends to fear impulses in himself and others. As a teacher, he is dependent, defensive, and conscientious to the point of rigidity.

Which kind of teacher is most effective? It was found that the self-controlled teacher is most effective both with respect to academic achievement and in encouraging friendliness in the children. A hostile or dominating teacher—as the turbulent individual is likely to be—generally has an adverse effect on the children. Pupils of such a teacher have difficulty adjusting to the school setting. They devote less energy to constructive activities and more energy to disruptive and aggressive behaviors. The fearful teachers were found to be least effective in the actual process of teaching. Their students scored the lowest of the three groups on academic achievement tests.

Another study of the effects of teacher personality on children traced the changes in the same children from teacher to teacher. For the purposes of this study, the teachers were classified into two categories: dominative, or authoritarian; and integrative, or approving and sensitive. The children were in second grade during the first year of the study. It was found that the children who had the integrative teacher engaged in more constructive activities, displayed initiative, and related well to others. By contrast, the children who had the dominative teacher paid less attention to their work and engaged in more disruptive activity in class. The following year the same children and teachers were studied. Teacher styles remained unchanged; however, children who had previously been placed with the dominative teacher showed more integrative behavior when placed with the integrative teacher, and vice versa (Anderson and Brewer 1946; Anderson, Brewer, and Reed 1946).

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428 Research has shown that children who manifest a high degree of test anxiety obtain low scores on various measures of achievement and intelligence (Sarason, Hill, and Zimbardo 1964). As the child becomes more anxious, his performance declines; however, if the anxiety can be relieved, his performance improves (Hill and Sarason 1966).

Teacher Behavior and Student Progress. A number of studies have investigated the relationship between teacher characteristics and children's academic and social progress in the school situation. In one such study (*80*) involving fourth, fifth, and sixth graders, three broad teacher-types were isolated on the basis of psychological testing. 551

Turbulent teachers appeared to be turbulent in both feeling and thought, with aggressive and sexual impulses close to consciousness. While these impulses tended to be expressed primarily in fantasy and verbal aggression, they sometimes resulted in overt action. This type of teacher did not appear to feel a strong need for acceptance by others; did not identify closely with others; and did not appear to be ambitious for leadership. She had little interest in orderliness or self-discipline, and her likes and dislikes tended to be sharper than those of other types. "Her main interest is in thinking, imagining, and conjecturing. She is not, therefore, especially warm or empathic. To others, she is likely to seem blunt, impulsive, and unpredictable. She may often seem tense. She wants to be independent of authority and to be free to do uninhibited and unconventional thinking" (*80*, 402–403).

The ***self-controlled*** teacher, in contrast, emerged as methodical, self-disciplined, not particularly interested in the opposite sex, and not interested in displaying wit at the expense of others. Such a teacher "feels most secure when things run smoothly. She likes to keep her thoughts and feelings to herself. She does not like to listen to 'hot' arguments, to be around people who forget themselves and talk freely, nor does she like 'to stick by the truth no matter whom it hurts'" (*80*, 403). 552

The self-controlled teacher, while ambitious and desiring leadership, does not like to be in the limelight. In her zeal to have things run smoothly, she sometimes tends to be apprehensive and even rigid about making on-the-spot changes in her plans. She tends to be sensitive to the reactions of others, and can be relied upon to accept responsibility and execute effectively ideas which have been formulated by others. While somewhat submissive to authority herself, she may also tend to be authoritarian toward subordinates.

The *fearful* teacher stands in rather marked contrast to both of the other types. She appeared fearful of contamination by her environment, afraid of being alone, and afraid of her sexual impulses. "She tends to feel helpless, dependent, and defensive. She is very conscientious, likes to 'stick by the truth no matter whom it hurts,' to have rules by which to abide, and is irritated by those who do not abide by the rules. She is afraid of doing the wrong thing" (*80*, 403).

The relation of type of teacher personality to academic growth (as measured by the Stanford Achievement Test) and to social development was then investigated.

It was found that children, *in general*, made the greatest academic progress under the self-controlled teacher and least under the fearful teacher; children under self-controlled teachers averaged about half again as much academic progress as those under fearful teachers. Similarly, growth in "friendliness" during the school year was significantly greater under self-controlled teachers than under either turbulent or fearful teachers (*80*). Other studies (*19, 62, 100*) suggest that students generally prefer and progress more under teachers who are: "warm"; possessed of a high degree of "ego strength"; enthusiastic; able to display initiative; creative; reactive to suggestions; poised and adaptable; planful; interested in parental and community relations; and aware of individual differences in children and oriented toward individual guidance.

In contrast, teachers who are hostile or dominating generally appear to affect pupil adjustment adversely. In a series of related studies (*3–8*), Anderson and Anderson and their coworkers undertook to study "The nature and degree of relationship between . . . children's behavior . . . and . . . teacher's dominative and socially integrated contacts." These investigators were interested in testing two hypotheses which they felt could be applied to teacher-child relations. The first of these, referred to as "The Hypothesis of the Growth Circle," was that "Integrative [i.e., give-and-take, democratic] behavior in one person tends to increase integrative behavior in others" (*5*). The second hypothesis, referred to as "Hypothesis of the Vicious Circle," was that "Dominative [i.e., authoritarian] behavior in one person tends to incite domination in others" (*5*).

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It was found that the children with the more integrative teacher tended to behave more integratively than did the children of the more dominative teacher. They displayed a significantly greater number of behaviors reflecting spontaneity, initiative, and constructive social attitudes relating to others. The findings "were consistent with the hypothesis that *integration in the teacher induces integrative behavior of the child*" (*7*). 553

On the other hand, the children with the more dominating teacher showed significantly higher frequencies of nonconforming behavior. This supported directly the hypothesis that domination incites resistance. In addition, the children with the more dominating teacher paid less attention to their work, engaging more in such activities as looking around and whispering to their companions (*7*). "If it is a pedagogical objective for a teacher to reduce the conflict and increase the harmony in her school room, then the study showed that [the dominating teacher] was defeating her own purpose" (*7*).

These same teachers and children were studied a year later (*6*). The children by this time were, of course, in the third grade. It was found that the teachers tended to behave in a similar manner year after year, regardless of the kinds of pupils they encountered. The children, on the other hand, did not. They showed far greater flexibility, reacting dominatively if they had a dominative teacher, but shifting readily to integrative behavior if their next teacher happened to be an integrative individual.

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There is a positive relation between *test anxiety* and general anxiety—for example, anxiety over the dark, ghosts, or illness (*71, 82, 136, 137*). Moreover, anxiety scores have been found to be significantly and negatively related to a wide variety of measures, such as IQ, achievement-test scores for reading and arithmetic, and school performance (*55, 60, 71, 82, 131, 137, 151*). The strength of these relationships tends to increase with age (*82*). Also, while individual children may increase or decrease in anxiety with age, test performance tends to parallel these changes. Thus for children who become more anxious, performance declines; for those whose anxiety decreases, performance improves (*82*). 564

80. Heil & Washburne, 1961
3–8. Anderson et al.
82. Hill and Sarason, 1966
137. Sarason, Hill and Zimbardo, 1964

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429 ATTITUDES TOWARD AUTHORITY. Some early studies have described certain fairly consistent social-class differences between children in their

430 perceptions of parents and other authorities. It was found that middle-class children are generally positive in their opinions of their parents and other people in authority positions, whereas lower-class children more often see their parents as severe and unreasonable. It follows, then, that lower-class children are themselves more likely to fear authority and to show greater concern for compliance with rules (Dolger and Ginandes 1946).

Meltzer (1936) also found differences in upper-, middle-, and lower-class children's attitudes toward their parents. His study revealed that middle-class children seemed to express the most positive attitudes toward their parents. Lower-class children were most ambivalent about their feelings toward their parents, and they expressed the greatest insecurity about themselves. These children viewed their parents as repressive and uninterested in their needs. The upper-class children were most variable and represented both extremes—some expressed adoration for their parents, while others were fearful of them. It is interesting to note that as a group, the upper-class children had the greatest number of instances of both overdependency and rejection (Meltzer 1936).

While the reasons for these class-based differences in children's attitudes toward parents and authority figures are undoubtedly complex, a number of contributing factors have been considered. One such factor is the larger family size of the lower classes. A recent study showed that as the number of children in a family increased, the mother became less accepting of the individual children. Large family size was also shown to lead to an increased amount of hostile psychological control on the part of the mother which was directed particularly toward daughters (Nuttall and Nuttall 1971).

The parent who is in the lower class is likely to be experiencing more economic strains and burdens than the middle-class parent, thereby leaving him less time and energy to devote to his children. Finally, the different value systems among classes may have a significant effect on philosophies of child rearing, and, ultimately, on the per-

431 sonality development of the child. For example, lower-class people tend to emphasize the value of obeying rules in socializing their children. It may be, in part, that they are anxious not to cause any trouble with the middle-class authorities—teachers, welfare workers, policemen, factory bosses—who can greatly affect their lives.

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Class Differences in Children's Attitudes to Parents

If the findings of these studies are valid, lower-class children would be expected to perceive their parents' disciplinary procedures as harsh and punitive, while those in the middle-class should see their parents as more lenient. Several investigations indicate that this is so. In one study, two groups of 21 fifth grade children, one lower-class and one upper-middle-class, were asked to write compositions concerning a 10-year-old boy's reactions to his younger brother's misbehavior and interference. It was assumed that through the medium of the story, the child would reveal his perceptions of his parents' disciplinary procedures (*41*).

Twice as many lower- as middle-class children wrote stories involving nonconstructive solutions to the problem (e.g., appealing to authority). The vast majority of the solutions suggested by the higher social-class group, but only half of those given by the lower-class children, were constructive, amicable settlements. In general, children of low socioeconomic status were more inclined to use punishment and to avenge misdeeds.

Each subject in this study was also interviewed privately and asked ten questions relating to routine discipline problems in school, at home, or in the neighborhood (e.g., Should children ever talk back to their parents?). The socioeconomically more-favored children revealed positive attitudes toward their parents' treatment and toward authority in general. Lower-class children viewed authority, including their parents, as unreasonable and severe. Hence they revealed more rigid compliance and greater fear of deviating from fixed rules and regulations (*41*).

Somewhat similar results were obtained in another study of the influences of social-class variations in discipline procedures on children's attitudes toward parents. The subjects, three groups of 50 children each in grades 5 to 8, were drawn from three schools representing upper-, middle-, and lower-class economic levels. Each child was seen individually, and after good rapport had been established, he was asked to speak out the first ten ideas (associations) that came to him when he thought of his mother and father. These data were analyzed to determine children's notions and descriptions of their parents; nature and degree of attachment and dependence; feeling tone, and degree of repression of expressiveness (*122*).

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Although there was great variability in each group, children of different economic levels generally revealed fairly distinct attitudes toward their parents. For example, as a group, middle-class children manifested pleasant feelings, accepting and respecting their parents, whom they regarded as helpful and permissive. Few of these children appeared to be overly dependent or hostile to their parents.

Lower-class children, on the other hand, had the greatest number of unfavorable reactions. Of the three groups, they were the most ambivalent (had mixed love and hostility) toward the parents and were the most insecure. Although they had relatively few feelings of rejection or overdependence, they felt that their parents were generally repressive and gave them little companionship. The upper-class group was the most variable, but as a group they expressed the most severe feelings of rejection and overdependency. Hostility was less common in this group than among the lower-class subjects, but adoration, together with fear and guilt, was more prevalent.

41. Dolger and Ginandes, 1946
122. Meltzer, 1936

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435 EARLY DEVELOPMENT OF PREJUDICE. Prejudiced attitudes toward members of other ethnic and racial groups have been observed among children as early as kindergarten age; and by the time they have completed the early years of school, these children's attitudes have come to resemble very closely those of their parents (Radke, Trager, and Davis 1949). These findings suggest two things. First, such attitudes must be learned from either the verbal or the nonverbal behavior of the parents, who are the most important influence on the child's development in the early years. Second, interventions designed to change prejudiced behavior must take place even before the child enters kindergarten, for by that time he has already learned hostility toward other ethnic groups.

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The Development of Prejudice

By kindergarten, many children have developed hostile attitudes toward minority groups. During the early school years more children acquire these prejudices, which become more crystallized and conform more closely to adult patterns of prejudice (147–149). Children's prejudices are rarely based on their own experiences. Their verbalizations about minorities typically reflect negative attitudes learned from the direct or indirect teaching of adults (147, 148). Parents may make statements in support of democratic

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Background and Personality of Prejudiced Children. Children may acquire the prejudices of those with whom they identify—parents, peers, their social group. Children of prejudiced parents may become bigoted, while those emulating tolerant parents may develop democratic attitudes. However, more is involved in the development of prejudice than simple imitation of attitudes. Studies of anti-Semitic and anti-Negro adults show that their prejudices are components of broader patterns of attitudes and are related to basic personality structure. Compared with tolerant people, prejudiced adults tend to be rigid, authoritarian, highly conforming, and overly moralistic (1).

An excellent study by Frenkel-Brunswik "designed to throw light on the determinants of susceptibility to racial or ethnic prejudice and allied forms of undemocratic opinions and attitudes" (54, 295) demonstrates that children's ethnic prejudices are also related to general personality structure. About 1500 California boys and girls between the ages of 11 and 16 were given tests measuring attitudes toward Jews, Negroes, Japanese, Mexicans, and out-groups in general. A series of statements about these groups was presented and the subjects were asked to express their agreement or disagreement with each. Some contained stereotypical accusations: Japanese cruelty, Negro laziness, Jewish radicalism and money-mindedness, etc. Others involved sharing activities with minority-group members (e.g., eating in the same restaurants, living in the same neighborhood, socializing together). From the larger group, the 120 most and least prejudiced children were selected for further study, including personality tests and interviews.

Ethnocentric (prejudiced) children revealed selfish orientations toward America and indifference toward other countries. They agreed with generally intolerant statements (e.g., "Only people who are like myself have the right to be happy"; "We should not send any of our food to foreign countries, but should think of America first") much more frequently than unprejudiced children did.

Other generalized attitudes typical of the prejudiced child, but not the unprejudiced, were: rejection of all that is weak or different; rigid conceptions of appropriate sex roles, together with intolerance of passive or feminine behavior in boys and masculine or tomboyish behavior in girls; admiration of the strong, tough, powerful, and in the boys, a fear of weakness in themselves; rigid conformity to approved social values and moralistic condemnation of others; feelings of helplessness in a world thought to be full of chaos and destruction. All these attitudes were considered indicative of "narrow and rigid personality" (54).

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436 PERSONALITY CORRELATES OF PREJUDICE. Just as people manifest differences in other kinds of personality traits, they show large differences in susceptibility to prejudiced beliefs. Studies have revealed a number of characteristics associated with prejudice.

Frenkel-Brunswik (1948) tested 1500 children between the ages of 11 and 16, and concluded that prejudiced children tend to express a whole constellation of other beliefs which picture them as having rigid and authoritarian personalities. They also tend to believe in a firm delineation of sex roles, being highly intolerant of weak behavior in males or aggressive behavior in females.

Other studies of prejudice among children have dealt with self-concept. They have revealed that children who hold prejudiced beliefs are also plagued by doubts about their own abilities (Tabachnick 1962; Trent 1957). A related study showed that black children with poor self-concepts expressed fewer positive opinions about both blacks and whites than did those with more favorable self-concepts (Trent 1957).

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Prejudiced children show significantly poorer self-concepts than unprejudiced children and less satisfaction with their own mental abilities; impaired social relations with members of the same- and opposite-sex parents and teachers; and overconcern with their own personality and with school subjects. Interestingly, no relations were obtained between prejudice and actual school achievement (178, 183).

Such findings are not restricted to the dominant white majority. In a study of black 9- to 18-year-old pupils in three schools in New York City, it was found that black children who were most self-accepting expressed significantly more positive attitudes toward *both* blacks and whites than did children who were least self-accepting (183).

147. Radke & Trager, 1950
148. Radke, Trager & Davis, 1949
149. Radke-Yarrow, Trager & Miller, 1952
172. Tabachnick, 1962
183. Trent, 1957

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PARENTAL BEHAVIORS AND PREJUDICE. One theory holds that childhood prejudice stems from parental authoritarianism and rigidity. In the study by Frenkel-Brunswik mentioned above, it was found that prejudiced children had relationships with their parents that were characterized by harsh, punitive treatment and lack of affection. This suggests that these children learned to deal with other people in the authoritarian and rigid manner in which their parents dealt with them; and, therefore, they developed prejudiced opinions. Another study found that even if parents did not express overtly prejudiced attitudes toward other ethnic groups, children learned these attitudes from them anyway through the parents' own social relationships and restrictions on the child's relationships with other children (Radke-Yarrow, Trager, and Miller 1952).

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However, the hypothesis that prejudice results from parental authoritarianism and rigidity has not been consistently confirmed by other studies. In one case, prejudice in children was shown to be related to moderate, as opposed to severe, disciplinary practices and high parental ethnocentrism, suggesting that a parent must be somewhat rewarding to be imitated (Epstein and Komorita 1966a). These same findings generally held true for black children as well, for whom the prejudice was directed against both blacks and whites. The investigators concluded that prejudice is a manifestation of a general misanthropy which is learned from the parents. In other words, the prejudiced person tends to dislike other people in any case, but attitudes learned from the parents give specific direction to these feelings (Epstein and Komorita 1966b).

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In discussing relationships with parents, the tolerant children frequently mentioned affection, cooperation, and companionship, while the prejudiced children complained of lack of affection and submission to stern, harsh, punitive treatment. Interviews with the parents offered evidence that the tolerant child "learns at home the equalitarian and individualized approach to people, as the ethnocentric child learns the authoritarian and hierarchical way of thinking" (54, 302).

From these data, Frenkel-Brunswik concluded:

> From the point of view of society as a whole, the most important problem . . . seems to be the child's attitude toward authority. Forced submission to authority produces only surface conformity countermanded by violent underlying destructiveness, dangerous to the very society to which there seems to be conformity. Only a frightened and frustrated child will tend to gain safety and security by oversimplified black-white schematizations and categorizations on the basis of crude, external characteristics. Deliberately planned democratic participation in school and family, individualized approach to the child, and the right proportion of permissiveness and guidance may be instrumental in bringing about the attitude necessary for a genuine identification with society and thus for international understanding (79, 306).

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Parents may make statements in support of democratic values and intercultural education and express opposition to racial or religious segregation in the schools. However, they often have little insight into their own underlying feelings toward minority groups or the implications of their own group membership, and make no direct or planned attempts to teach their children ethnic attitudes. Instead, such attitudes are conveyed to the children by restricting social relationships in the home, neighborhood, and school, and by disapproving of friendships with members of certain groups (749).

146. Radke-Yarrow, Trager, and Miller, 1952

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Modification of Racial Attitudes

As intolerance is related to firmly established characteristics, it might be inferred that intolerance could be reduced only by changing the basic personality structure of the prejudiced person. This, of course, would require intensive clinical treatment.

It would be a serious mistake, however, to assume that there is a one-to-one correspondence between personality and prejudice. If they live among bigoted people, well-adjusted children may learn to behave intolerantly—that is, in accordance with the standard or accepted attitudes of their own social group. In such cases, prejudice might be viewed as a reflection of the child's identification with his group rather than as displacement of his hostility toward his parents. Pehaps those whose prejudice has this kind of basis, but who in general are well adjusted and not essentially hostile, would become more tolerant if they were transferred to an environment that promoted "democratic living" and an equalitarian philosophy. On the other hand, those who *need* scapegoats as an outlet for deep-lying aggressive feelings may not be able to relinquish their prejudices, even in a democratic setting. To test these hypotheses, **one investigator (130) studied changes in boys' attitudes toward Negroes after a four-week vacation at an interracial camp** where blacks and whites lived, ate, and played together. The subjects were 106 white New York City boys ranging from 8 to 14 years of age.

An indirect test of prejudice was administered to each boy less than 24 hours before he left home—that is, before intimate contact with Negro boys at camp. In this test the child was given 12 photographs of boys' faces, eight of them black, four of them white. In the first part of the test, the child simply indicated his order of preference for these faces. In the second part, he selected the pictures of boys he would like to go to the movies with, invite home to lunch, etc. The extent of discrimination against the pictures of Negroes constituted the measure of prejudice. This test was given again just before the children left the camp.

Personality structure was evaluated by analyzing responses to a picture-story test (the Thematic Apperception Test) in which the subject's underlying needs and attitudes were reflected in the kinds of stories he told. Data about personal and social adjustment at camp were collected from two sources: a brief interview with each child and a camp social worker's report.

Following the camp experience, some of the boys increased significantly in prejudice whereas others decreased. As hypothesized, these changes were related to personality structure. In general, the boys who increased in prejudice were hostile, defiant youngsters who perceived the world as cruel and unpleasant and felt they were frequent victims of aggression. Because, for them, the expression of aggression led to punishment, retaliation, and restraint, they probably did not "act out" their hostile feelings. Hence they had greater needs to displace their aggression by means of anti-Negro prejudice.

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Moreover, these boys were dissatisfied with the camp itself, the other campers, and interpersonal relations there. The child who was poorly adjusted socially in the situation and did not find the experience rewarding probably did not identify with the camp or accept its attitudes. Under the circumstances, he may have felt more frustrated, and may have become more, rather than less, prejudiced against blacks.

Children who decreased in prejudice presented a sharply contrasting picture. They manifested fewer aggressive needs, less hostility toward their parents, fewer feelings of restraint, and generally favorable attitudes toward society. Consequently, they had little need to displace aggression through prejudice.

In the camp, they were well accepted by their peers, and their counselors judged them to be high in "ability to relate to others." **They complained less about interpersonal relations, were more satisfied with the camp experience and their fellow campers,** and probably formed more intimate friendships (130). It may be assumed that they found the experience rewarding and, consequently, identified more closely with the camp, accepting its tolerant philosophy.

In another extensive study on the modification of racial attitudes (146), more than 1000 children 8 to 13 years of age were observed at a summer camp. Some of the children, both white and black, lived in desegregated cabins for a two-week period. The behavior of the children in the desegregated situation was compared with the behavior of children who lived in segregated cabins.

Signs of tension (enuresis, nightmares, crying, physical symptoms, repeated accidents) were more frequent among the children living in the desegregated cabins. Moreover, the white children initially became vigilant to possible aggression from the black children. As might be expected from earlier work, both the black and white children viewed the latter as more desirable for friends and assigned higher status to the whites. However, there was a general trend for both black and white children to view the blacks as more desirable after the two weeks of desegregated living.

Although the experience of living in a biracial setting decreased suspicion and hostility between the groups, **the most important catalyst for change was the counselor. His attitudes and personality, particularly his warmth and personal security, facilitated the establishment of good interpersonal relation between the black and white children.**

Apparently both personality and social situational factors are involved in changes in race attitudes. The study suggests that prejudice may be reduced by educational measures, such as encouraging contacts between members of various races. Moreover, **this study highlights the importance of the attitudes of authority figures, such as teachers, in promoting more positive feelings toward minority groups in a desegregated setting,** whether it is a camp or a school. **Modification** of the mutual fears, suspicions, and resentments of black and white children **is most apt to occur when the adult in charge favors desegregation and is admired and liked by the children (146).**

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CHANGING PREJUDICED ATTITUDES. How can prejudice be stopped or changed? **Several studies of this question have been conducted in summer camps in which interracial groups of children have lived together for periods of several weeks at a time. Mussen (1950) found that prejudice increased in some children while it decreased in others. The changes that took place appeared to be closely related to the children's personality structures. Those children whose prejudices increased were poorly adjusted socially and did not enjoy the camp experience in general. In contrast, the children whose prejudices decreased had good interpersonal relations with other people, enjoyed the camp experience, and seemed less hostile.** These results suggest that the child whose personality characteristics tend to be related to prejudice is only encouraged in his belief by exposure to the actual objects of his hostility. It seems that something more than increased interaction with members of the other group is needed to dampen attitudes of prejudice.

Another experiment, conducted in a similar manner, was more successful in decreasing hostility between the groups. **In this case, a counselor actively encouraged good interpersonal relations between the two groups. It seems that if a respected authority figure, who is also well liked, tries to teach the children to relate to each other as individuals rather than as group members, prejudice may be reduced (Radke-Yarrow 1958).**

146. Radke-Yarrow, 1958
130. Mussen, 1950

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PARENTAL AMBIVALENCE. Many parents experience conflicts about how much independence they should allow their adolescent offspring. **Some parents think that they want their children to be happy, but unconsciously they are jealous of their children and keep them tied to parental apron strings. Other parents are afraid their children will be hurt or disgraced if they are allowed to have complete freedom, particularly in sexual matters. Needless to say, parental ambivalence on such questions will tend to produce conflict and confusion in both the parent and the adolescent.**

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Many parents, while consciously desirous that their children lead a happy and rewarding life, often keep them tied to their parental apron strings through jealousy. Unconsciously, they do not want their children to enjoy good times that they themselves have missed *(58)*.

There are, of course, many other reasons why parents may be reluctant to grant their children independence, such as fearing that they may marry too young and thus require a longer period of financial support. Parents may also fear that a young person will marry unwisely, or marry the wrong person, or someone beneath him—whatever that may mean to the particular family. Moreover, they fear there is a real danger of sexual indulgence before marriage and that even friendly proximity is going to be a temptation to sexual intercourse, with the resultant danger of illegitimate pregnancy or disease and the consequent disgrace *(58)*. Despite the current availability of birth-control pills, they are not employed in most initial instances of premarital intercourse.

In general, it appears that the most common source of parental ambivalence (mixed feelings) toward the child's assumption of independence is the realization on the one hand that the child must someday stand on his own feet, but the coexistent fear that in learning to do so he will be deeply hurt. A great many of these fears, however, are unfounded.

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CROSS-CULTURAL DIFFERENCES. A look at other societies reveals great variations in the matter of personal autonomy from the family. In some cultures there is no discernible break from the family during the age of adolescence. Rather, the child gradually acquires skills and learns independence throughout his life.

A good example of this gradual growing-up process can be found among the Arapesh people of New Guinea. Here, adolescents assume much of the responsibility for support of the family, yet they do not leave home or experience changes in family relationships immediately. A boy's future wife is selected by his parents, and the choice is agreed to by the girl's parents while the children are still very young.

The Arapesh girl becomes acquainted with her future husband long before they marry, and she comes to know her in-laws almost as well as she knows her own parents. Her training in the tasks of motherhood and wifehood is very gradual. She experiences none of the confusion sometimes found in our society of moving into a strange home with a person she has known only for a short while and having to assume many burdens all at once.

On the other hand, adolescents of the Mundugumors (also of New Guinea) have a difficult time gaining independence from their families. Mundugumor society is characterized by hostility between members of the same sex—even between father and son, mother and daughter. Thus, the boy seeks independence chiefly to get away from a father he distrusts, while at the same time his mother tends to reinforce his distrust for girls his own age. The Mundugumor girl has to contend with a jealous and possessive father, as well as an often hostile mother. As a result, a smooth transition from adolescence to autonomous adulthood is very difficult (Mead 1939).

Western society falls somewhere in between these two extremes on the scale of emotional and behavioral autonomy.

Establishment of Independence in Other Cultures

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In a number of nonliterate societies the task of establishing independence may be less difficult than it is in our culture. In some societies, the child may be prepared more gradually for independence, being given increasing freedom from early childhood on, with no discernible spurt at puberty. In others, true independence from the parents may be postponed until long after puberty, and may occur slowly. Among the Arapesh people of New Guinea, for example, the adolescent takes over much of the responsibility for supporting and managing the household, but there are few marked changes in basic family relationships at this time. The Arapesh girl does not 624 suddenly leave home during adolescence to go to live in a strange household with strange people, in order to undergo the joint uncertainties of married life, sex, and child-bearing. In this culture, the girl has been chosen as a wife by her husband's parents many years prior to the consummation of the marriage, and she has been allowed during the interim to wander confidently back and forth between her own home and her future husband's. By the time her marriage is consummated she has come to think of her parents-in-law as an additional mother and father. She has known her husband almost as an older brother, whose responsibility it has been to look after her, to feed her, to help her grow up.

As time goes on, the Arapesh girl takes on increasing responsibility in her new home. However, many of the problems which occur frequently in American marriages do not exist in Arapesh culture. There is none of the atmosphere of confusion, of sudden complete separation from parents, of moving into a new house and beginning a separate existence with a relatively unknown male, and of bearing and caring for her babies by herself.

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In contrast to the Arapesh and Mixtecan youth, the Mundugumor adolescent finds the problem of orderly transition from dependence on the parents to the setting up of an independent household infinitely more difficult. This increased difficulty is at least partially attributable to the fact that "Mundugumor social organization is based on a theory of a natural hostility between all members of the same sex . . ." (128, 176). Fathers and sons view each other almost as natural enemies, as do mothers and daughters. Moreover, relations between husband and wife are notably poor. Fathers band together with daughters, while mothers band together with sons. Between the two subfamily groups rivalry and distrust are characteristic.

Consequently, it seems likely that the Mundugumor boy approaches adolescence close psychologically only to his mother, hostile toward his father, and distrustful of girls his own age. The girl, on the other hand, has strong ties to her father, resentment toward her mother, and distrust of her male contemporaries. Furthermore, the girl's problem is magnified because of the jealous father's attempts to keep his hold on her as long as possible (128).

There seems little doubt that Mundugumor children, who grow up in a culture that contains so much hostility and so little tenderness, early develop a kind of hardy independence that prepares them somewhat for the demands they must face in adolescence. But this advantage is virtually negated by the fact that the independence demanded of the Mundugumor adolescent is so much more extreme than in most cultures. The prospect of establishing independence is unpleasant, and in many ways threatening. In fact its only really attractive aspects seems to be escape from the hostility of the same-sexed parent.

Problems of Independence in American Culture

In setting up his own household the American adolescent certainly encounters more stress than the Arapesh or Mixtecan youth, though he is spared much of the violence of the Mundugumor's independence struggles.

128. Margaret Mead, 1939

Vocational Orientation

American culture presents a maze of occupational choices of bewildering variety to the adolescent. Unlike some cultures (such as the Arapesh), occupations in the American culture are not limited to family-centered tasks like tilling a plot of land for growing food. The American youth must seek a vocation outside the family and often has very little specific idea of what he can do or would like to do. It is no longer the rule for adolescents to follow in their parents' footsteps.

To an adolescent growing up in our increasingly complex and technological society, the choice of a lifetime vocation is seen as an extremely crucial decision. With the development of computer technologies and automation, there is less and less need for the unskilled and semiskilled factory worker of the assembly line. It is in the areas of service occupations, media, communications, and information processing that the vocational alternatives are to be found. Such vocations require more and more advanced education and longer periods of training. There is pressure, then, on the adolescent to decide early on his or her vocation in order to plan for the necessary education. At the same time, however, the individual is confronted with a culture accelerating to such a degree that a vocational choice of today may conceivably be made obsolete tomorrow by some new technological advancement. Thus, today an individual must continue to assess the trends in the vocation of his choice, consider vocational alternatives, and perhaps even change his mind several times before finally settling on any particular vocation.

Usually, as the adolescent matures he becomes more specific and realistic about his occupational plans. Ask a child what he wants to be when he grows up, and his answer will most likely be in terms of some vocational stereotype of excitement or adventure—say, an astronaut, a movie star, or the more traditional fireman or policeman, for example. An adolescent, on the other hand, is apt to be not only more realistic about his vocational choices, but also increasingly aware of and concerned with the education and training necessary to achieve them. As the adolescent matures, he becomes both more specific about his vocational goals and more thoughtful of the actual demands and rewards of the work involved (Douvan and Adelson 1966).

A number of other factors influence an adolescent's thinking about vocational alternatives and his eventual choice of occupation. Among these influences are the individual's sex and socioeconomic background.

Vocational Adjustment in American Culture

In many nonliterate societies, the vocational problems of the adolescent are much simpler than in our own culture. The number of vocations supported by the culture are fewer, and the adolescent is already likely to be familiar with them—either through observation or apprenticeship. The Arapesh youth, for example, gradually takes over from his father responsibility for tilling the family garden as he enters adolescence (cf. pp. 623–625). Furthermore, many, but by no means all, nonliterate societies lack the involvement in aggressive competitiveness and concern with social status characteristic of American culture (cf. pp. 624–625).

The typical adolescent in our own society does not share the advantages of the Arapesh youth. He knows that many of his important satisfactions will depend on his ability to find and keep a job, including his chances for full emancipation from his parents, for acceptance as an equal by his peers, and for getting married and maintaining a home.

But despite the importance of vocational adjustment for the American adolescent, he typically has only a vague idea of the nature of the various jobs available in the society. He does not know which he would be able to do successfully and would enjoy doing, the prior training required for a specific job, or the present or future demands for workers in the various occupations.

This problem, rather than becoming easier, is becoming increasingly difficult as our entire society grows more complex, more specialized, and more technologically oriented. The kinds of skills society requires are changing ever more rapidly as new technologies are developed. With the growth of automation, there is less and less room for the unskilled or semiskilled worker; prior education and training are becoming increasingly necessary for admission to the world of work. Further, as machines take on more of the jobs formerly performed by workers, there is a significant movement away from production and into service occupations. We shall have more to say later about some of these critical problems and their implications for the adolescent, including the socioeconomically deprived youth. For the present, we only wish to emphasize the increasing difficulties faced by most adolescents today in planning for their vocational futures.

Ordinarily, as the adolescent leaves his childhood behind, and the time when he must support himself approaches, he begins to spend more of his time thinking about vocational goals.

He also becomes progressively more realistic about these goals. As a child, he is likely to have preferred occupations which seemed active and exciting to him, such as those of cowboy, fireman, airplane pilot, or detective. The social status of his preferred occupation is not likely to have had much influence on him. However, as he grows older, he is likely to begin to prefer occupations of marked prestige in the adult world—being a famous doctor, scientist, or lawyer. Finally, as adulthood approaches, he is likely to settle upon some occupation that represents a realistic reconciliation between what he would like to do and what he thinks he might actually be able to do *(76, 133)*.

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CLASS DETERMINANTS OF OCCUPATION. Social class plays a significant role in determining the kinds of occupations with which an individual is familiar. His choices are determined to a great extent by his exposure. Children get first-hand ideas about work from hearing their parents talk about their jobs. Besides observing what their parents' working lives are like, adolescents are influenced by their parents' attitudes toward different occupations. These attitudes are often class-based. Rarely do we find upper-class or middle-class adolescents being encouraged to become firemen, policemen, or factory workers. Choices of lower-class occupations do not appeal to the aspirations of middle-class parents.

Lower- and working-class adolescents also show some tendency to aspire to the occupations of the dominant middle-class culture. These aspirations may be either encouraged or discouraged by their parents, depending on a number of factors—the parents' own desires for mobility or the nature of their relationship with their children, for example. One limiting factor on the aspirations of working-class adolescents is the inability of their families to afford the kind of education that is increasingly necessary to gain middle-class jobs. Nevertheless, it has been found that youths often aspire to job roles with a slightly higher socioeconomic status than those of their parents (Hollingshead 1949).

The same study by Hollingshead clearly showed the relationship of socioeconomic status to vocational choice. Adolescents in a midwestern city listed the occupations they were interested in. Seventy-seven percent of upper- and middle-class adolescents listed business or the professions, while only 7 percent of the adolescents in the lowest class listed such occupations. Only 1 percent of the youths in the highest classes listed services and trades, while 25 percent in the lower classes listed services and trades. Lower-class subjects exhibited much more indecision concerning vocational choice than did subjects from middle or higher socioeconomic classes.

Several hypotheses have been advanced to explain these results. One theory is that youths from different classes assign different relative values to the same occupations. This would mean that more lower-class youths actually prefer factory jobs than do upper-class youths. A different view maintains that youths from different classes value the occupations in the same manner, but lower-class youths do not choose the more prestigious occupations requiring more education because they perceive that the odds are against their achieving such goals.

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It is important to note here that the Hollingshead study was conducted in 1949. While the results may still provide useful and valid information for consideration, obviously much has changed in our society since that time. Today more lower-class youths are seeking higher education, while higher education is being rejected by relatively large numbers of middle-class youths (the college dropouts). And the sometimes violently stated demands of students for educational reform undoubtedly indicate important shifts in attitudes and values since the Hollingshead study was conducted.

Subcultural Influences on Vocational Choice

Up to this point in the discussion, we have been dealing with broad problems of vocational choice as they affect adolescents in our culture. There are, however, two subcultural influences which affect vocational goals differentially, and which seem to us important enough to merit special consideration.

Socioeconomic Factors and Vocational Goals. Social-class membership operates to influence vocational goals in a variety of ways. For one thing, it helps to determine the kinds of occupations with which the individual will be familiar, and hence which he will be likely to consider in formulating his occupational aims. In addition, it plays an important role in determining the social acceptability (i.e., the reward value) of a given occupation to the young person and to his peers. Certain types of occupations are considered appropriate to the members of a particular social class, others inappropriate. The individual who deviates from class expectancies for occupational choice is likely to be subjected to anxiety-producing disapproval from his peers, particularly if this deviation is in the direction of jobs associated with lower-class status. The very young upper-class child who wants to be an iceman, or fireman, or policeman, may be indulged or even encouraged. After the attainment of adolescence, however, when the problem of vocational choice becomes a serious one with practical implications, the child's parents are not likely to find such notions amusing *(1)*.

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Choices of lower-status occupations run counter to the parents' ideas about appropriate behavior for a member of their social class, and consequently are likely to be discouraged. The parents may also fear that such a choice will lead to general social disapproval both of their child and indirectly of themselves. Also, when economic rewards are involved in the occupation chosen, they may fear that the child will not be able to live in the same neighborhood as other members of his social class, to afford the same social, recreational and educational advantages for himself and his family.

Aspirations toward higher-social-status occupations may also lead to social disapproval (particularly if they are flaunted openly) because such aspirations may be viewed as a threat by other members of the individual's social class. In this case, however, the disapproval is likely to be much less strong and, in the child's view, may be more than outweighed by the prospect of increased rewards associated with higher-class status. This observation is supported by the fact that actually most young people wish for jobs having a somewhat higher socioeconomic status than those of their parents *(109)*.

The relation of social-class membership to vocational aspiration is clearly demonstrated in a study by Hollingshead *(83)*. Adolescents in a small midwestern city were asked to list the occupations they would like to follow as adults. The results, subdivided according to social-class membership, are shown in Fig. 14.4. As may be seen, while 77 percent of the children of the highest two social classes listed business and professional occupations, only 7 percent of the children in the lowest social class made these choices. Similarly, while only 1 percent of Class I and II (higher social class) members listed the various services and trades, 25 percent of Class V (lower social class) did. It is interesting to note that the number of youths undecided about their vocational aspirations increased regularly as socioeconomic class decreased.

In attempting to account for such social-class differences in vocational goals, several hypotheses have been offered. One is that there are differences in the evaluation of the relative values assigned by adolescents to various occupations, and that these value differences account largely for social-class differences in vocational goals *(30)*. Other theorists, however, have argued that both middle-class and "working-class" youth agree on the relative desirability and prestige of various occupations, and that differences in goals stem not primarily from values but rather from class-associated perceptions of differences of opportunities and general life chances *(176)*. While adolescents may be somewhat unrealistic about their vocational goals, they nevertheless possess some awareness of practical obstacles which may modify their vocational aspirations, and these are certainly affected by social-class status.

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109. Kroger & Louttit, 1935

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PARENTAL INFLUENCE ON OCCUPATIONAL CHOICE. Parental influence is a fairly clear factor in determining vocational objectives. It has been found that children generally choose occupations in line with their parents' values and aspirations. Simpson (1962) reported, for example, that ambitious middle-class boys receive the most parental support for their goals; working-class boys who are upwardly mobile receive the second greatest amount of parental support; and unambitious middle-class and nonmobile working-class boys receive the least amount of support from their parents.

There is some evidence that with increasing autonomy and a widening generation gap in evidence between adolescents and parents, there may be some shifting away from middle-class success patterns. One recent study (Rose and Elton 1971) has shown that vocationally undecided freshmen who left college had higher scores on personality tests for nonconformity than those who remained in college. It was also found that they had lower standing academically and on American College Test scores. Thus, it is possible that vocational indecision is becoming increasingly associated with nonconformity and the search for personal autonomy.

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Parental Influences on Vocational Choice

One of the more obvious parental influences on vocational choice is that of *parental motivation*, and a good deal of variation in parental motivation occurs within all social classes. It has been hypothesized that a working-class boy is relatively likely to seek advanced education and occupational mobility if his parents urge him to do so, and unlikely to seek mobility if they do not exert pressure in this direction (*172*; see also *21*, *66*, *100*, *118*). Indeed, such a boy with strong parental support may prove more ambitious than a middle-class boy without such parental support and urging. According to the data of one study, *ambitious middle-class boys* showed the highest percentage of parental support; *mobile working-class boys* ranked a close second. In contrast, *unambitious middle-class boys* and *nonmobile working-class boys* ranked far behind in percentage of parental support (*172*). These results provide considerable support for the hypothesis that parental influence is associated with mobility aspiration among working-class boys, and also with ambition among middle-class boys. Indeed, as the author points out, parental advice may be a better predictor of high ambition than is the boy's social class alone.

Parental motivation has been found to be significantly related to student's aspiration level, even when social-class status and IQ are held con-

172. Simpson (1962)

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Sexual Behavior in Adolescence

Along with the rather rapid maturation of the sexual organs and the increased hormonal activity during adolescence, something of a sexual awakening occurs. The adolescent begins to be aware of his or her sex in new terms—an increased sexual urge gives rise to more sexual experimentation and fantasizing. The manner in which the child confronts and adjusts to these new sexual feelings

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depends, of course, on a wide variety of psychological, cultural, and societal factors. We shall consider some of the ways in which the increased sexual drive affects adolescents of different sex, socioeconomic class, and cultures.

* * *

CLASS DIFFERENCES. There are several rather definite differences in sexual behavior between adolescents of different socioeconomic levels. Most notable among them are the differences between the sexual behavior of upper- and middle-class boys and that of boys from lower-class backgrounds. (Kinsey found no correlation between socioeconomic background and sexual behavior for adolescent girls.) Boys from upper- and middle-class families show a marked tendency toward masturbation and petting to climax as sexual outlets during adolescence. Though by no means approved by parents in the higher socioeconomic classes, masturbation and heavy petting are less objectionable than premarital intercourse.

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On the other hand, adolescent boys from lower-class backgrounds engage in heterosexual intercourse much more frequently than their middle- and upper-class peers. In the lower classes, sexual intercourse is considered the most normal sexual outlet, while there are strong taboos against masturbation or any other means of sexual release perceived as abnormal substitutes for direct intercourse (Kinsey 1948).

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Because of such statistics on premarital sex among adolescents and the often excessive accent on sexual subjects in the entertainment media, it is sometimes argued that American morality is on the decline. However, there are fairly clear indications that while moral values may be changing, they are not necessarily lowering. For example, in a 1966 survey of 13- to 20-year-old youths asked about changing moral values, 75 percent agreed that they were developing a new sexual morality, and 82 percent believed that this new morality did not represent a lowering of standards (*Look* 1966).

SEXUAL BEHAVIOR IN THE ADOLESCENT

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Increased sexual drive, influenced by hormonal and anatomical changes, is, of course, a major physiological concomitant of adolescence. However, the forms it takes, and the manner in which it is expressed will vary, depending on the sex of the adolescent and also upon a wide variety of psychological and cultural forces. There is little question that for most boys, the rapid increase in sexual drive which accompanies adolescence is difficult, if not impossible, to deny. In boys this drive is "imperious and biologically specific. . . . He must confront [it] directly, consciously, find within himself the means of obtaining sexual discharge without excessive guilt, and means of control without crippling inhibitions" (*45*, 110).

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Socioeconomic Differences. In addition to differences between adolescent males and females in overall sexual responsiveness and some, though more limited, differences between today's adolescents and their parents, there are also differences in responsiveness related to social-class membership (*106–107*).

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It is interesting to note that the effects of social-class membership apparently are considerably less for females than for males. In their report of female sex behavior, Kinsey and his associates pointed out: "There seems to have been no correlation at all between occupational classes of the parental homes in which the females in the sample have been raised and the incidences and frequencies of their total [sexual] outlet" (*107*, 529). There also appeared to be little relationship between social-class background of females and incidence or frequency of most types of sexual response.

In contrast to the rather negligible influences of social-class membership upon sexual behavior in females, religious affiliations seem to play a strong role, both during adolescence and in later life. Kinsey found regularly that inactive members of the Protestant, Jewish, and Catholic faiths were consistently more sexually active both before and after marriage than were moderately active church members, while devout members, in turn, were consistently the least active sexually. Other investigators have obtained similar results (*117*).

Among boys, on the other hand, implicit standards of acceptable sexual behavior vary from one social-class level to another (*11*). Among upper-middle-class older adolescent boys, masturbation and petting to climax, while not specifically approved, are generally viewed as more acceptable than actual intercourse. Conversely, there is a general tendency among lower-class adolescents and adults to consider these practices abnormal (*106*). As a result, masturbation and petting are more common among the higher social-class groups than among the lower.

In contrast, actual intercourse, which is more anxiety-arousing among upper- and middle-class boys, is considered entirely normal by those of lower status: "They have nothing like the strong (higher-level) tabu against premarital intercourse, and, on the contrary, accept it as natural and inevitable and as a desirable thing. Lower-level tabus are more often turned against an avoidance of intercourse and against any substitution for simple and direct coitus" (*106*, 379). As a reflection of these disparate attitudes, Kinsey found that by age 15 nearly half of lower-class boys but only 10 percent of higher-status boys had engaged in intercourse (*106*). Among college males, less than one-half had intercourse during the adolescent years, while over three-quarters of the adolescents who did not finish grade school had premarital coitus (*80*, *157*).

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Sexual Attitudes and Values of American Adolescents

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If one asks adolescents themselves whether they think there is a "new morality" regarding sex, the answer—at least among middle- and upper-class youth—definitely appears to be "yes." In a recent nationwide questionnaire interview of 550 adolescents, aged 13 to 20, 75 percent stated the belief that they were developing a new sexual morality. However, they do not view this change as a *lowering* of morals; 82 percent of the sample viewed their morals as "no lower than their parents" (*184*, 48). In the words of one adolescent girl, "Adults are just plain phonies about sex."

106. Kinsey (1948)

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Sex-role Identity and Self-concept

489 Closely related to the adolescent's self-identity is his sexual identification and sex-role development. The degree of security an individual feels in his sexual identity, and how consistent this identity is with the expectations of family and peers, cannot help but affect the adolescent's overall self-concept and feelings of self-esteem.

A study by Mussen (1961) revealed that adolescent boys exhibiting highly masculine interests on the Strong Vocational Interest Test tended to be more self-confident and have more positive self-concepts than boys of equal intelligence and from similar socioeconomic backgrounds who showed more feminine interests. However, Mussen found the reverse situation to be true with adult males. In a follow-up study, Mussen (1962) tested the same subjects, then in their thirties. Those who had shown highly masculine interests during adolescence, while still "masculine" in their interests, tended to lack the qualities of leadership, self-confidence, and self-acceptance as adults. On the other hand, boys who had feminine interests in adolescence showed more positive signs of leadership, self-confidence, and self-esteem as adults.

Mussen attributed this shift to the fact that many respected and well-rewarded adult vocational roles require a combination of what has been stereotyped as "masculine" and "feminine" characteristics. For example, a doctor or teacher must be both dominant and aggressive, as well as sensitive and receptive. Thus, while certain stereotypes of "masculine" characteristics may be of prestige value to adolescent boys, the same characteristics may inhibit the development of attributes important to successful vocational achievements in adulthood.

The results of a study by Heilbrun (1964) seem to support Mussen's earlier findings. Heilbrun found that male adolescents who had high masculinity ratings exhibited greater social-role consistency (an Eriksonian criterion of identity achievement) than did males with low masculinity ratings. It was felt that social reward for conformity to cultural stereotypes of masculinity seems to strengthen ego-identity, though perhaps at the expense of flexibility.

The same has been found to be true for adolescent girls. Douvan and Adelson (1966), for example, found that girls who indicated strong and unambiguous feminine sex-role identification seemed also to have the strongest sense of self-identity. In general, these girls identified with their mothers, choosing either the mother or another feminine relative as an adult ideal. Their relationships with their parents were amiable and distinguished by compliancy with parental demands, usually identifying with their parents' point of view. The investigators pointed out that

490 such girls were apt to gain self-esteem from parental praise more often than girls with more ambivalent feminine sex-role identifications.

On the other hand, the girls with the lowest scores for traditionally feminine interests were socially less at ease in their relationships with adults. These girls also exhibited generally weaker self-concepts and lower self-esteem than the unambivalent girls (Douvan and Adelson 1966). In general, these results suggest that greatest ego strength is not necessarily related to open-mindedness and flexibility. In fact, they may often be contrasting characteristics.

Sex-Typing and Ego Identity. We have indicated that development of a strong sense of ego identity is likely to be facilitated by identification with a parent who serves as an adequate model for sex-appropriate behavior. However, in view of the complex and shifting demands on the adolescent and young adult in our society, it appears important to qualify what is meant by "appropriate sex-role behavior" if we are to avoid misunderstanding and confusion. 691

Generally, the boy or girl who has developed a secure sex-role identification that he views as consistent with his image of himself and with the expectations of his peers and society will have an easier time establishing a confident ego identity. Thus it is not surprising that a generally positive relationship has been found between sex-stereotyped behavior in adolescent males and ego identity, as measured by self-perceived role consistency (61).

Furthermore, boys with highly masculine interests show more positive self-conceptions and more self-confidence than boys with relatively feminine interests (89). They appear more carefree, more contented, more relaxed, more exuberant, happier, calmer, and smoother in social functioning than those with less masculine interests (89).

However, the picture does not appear to be so simple as one might initially expect. When these same boys are examined again as young adults, comparisons of the two groups show that highly masculine boys tend to remain more traditionally "masculine" in their interests, but they appear less confident in their perception of themselves:

> During adolescence, highly masculine subjects possessed more self-confidence and greater feelings of adequacy than the other group, but as adults, they were relatively lacking in qualities of leadership, dominance, self-confidence, and self-acceptance. In general, there seems to have been a shift in the self-concepts of the two groups in adulthood, the originally highly masculine boys apparently feeling less positive about themselves after adolescence; and, correlatively, the less masculine group changing in a favorable direction (88, 440).

How can these shifts be explained? It appears that the personality traits associated with a *high* degree of masculinity of interests may be maximally rewarding in the culture of the adolescent peer group, with its greater emphasis on masculine stereotypes and with relatively fewer culturally approved social and vocational roles available. In contrast, in adulthood, less stereotypy in the "masculinity" of one's social and vocational role is necessary. Admittedly, highly "feminine" roles, such as ballet dancer, interior decorator, or women's hairdresser may continue to be viewed with suspicion, but many vocational roles that combine "masculine" demands for independence and aggressiveness and "feminine" demands for nurturance and interpersonal sensitivity and orientation (e.g., physician, psychologist, author, teacher, personnel director) are highly rewarded in adulthood. 692

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This viewpoint appears to receive support in Douvan and Adelson's study of adolescent experience (38), in which a variety of groups of adolescent girls were investigated. Girls with a strong and *unambivalent* (i.e., without mixed feelings) *feminine sex-role identification* appeared clearly identified with their mothers, and apparently had close and amiable relationships with strong, traditional parents. Of all groups of girls analyzed, the *unambivalent feminine girls* most often chose their mothers or some other feminine relative as an adult ideal. This group reported fewer disagreements with their parents than other girls, and they more often spent part of their leisure time in family activities. These girls 693

> are distinguished by a compliant, dependent relationship to their parents (for example, they also gain self-esteem from being praised by adults more often than do ambivalent feminine girls), they observe parental regulations with caution and in a spirit of identification with the parents' point of view. Apparently compliance is also an important part of the parents' expectations—this group reports, more often than any other, that their parents expect them to be obedient and "respect authority" (38, 245).

On the other hand, their parents were not harsh, and these girls were rarely punished physically. Their parents apparently were strong and clear in stating requirements, and because the girls complied with their demands, little occasion for conflict or harshness occurred (38, 245). These girls, who represented one extreme along a dimension of relative femininity, also expressed *a clear sense of their own identity* and were "most thoroughly focused on the social and personal aspects of reality" (38, 244).

> Compared even to other feminine girls, she is consistently outstanding in this respect. She gains self-esteem from helping others and playing a succorant role; she typically chooses an adult ideal on the basis of interpersonal warmth and sensitivity. She shows little motivation for personal achievement. She prefers security to success, she does not daydream about achievement, but rather exclusively about popularity, dating, marriage, and family goals (38, 244). 694

At the opposite extreme, girls with *antifeminine identifications* were least likely to choose women at all (including mother, other feminine relatives, or unrelated women) as ideal adults. Their parents tended to be traditional and restrictive toward their daughters, and were considerably more punitive than the parents of any other group. Over a third of these girls reported that they were physically punished when they did something wrong, compared with less than half that number in the total sample. The antifeminine girls viewed parents as suspicious and lacking in trust, and expressed an almost unanimous wish for less restriction when asked how a girl might want her parents to be different. Parents of girls in this group discouraged autonomy, seldom allowed their daughters to take part in rule-making at home, and demanded unquestioning obedience and respect for authority. An atmosphere of conflict typically pervaded the family setting in this group.

These girls, in turn, responded with resentment against their parents' regulation; rejected the feminine role model as restricting freedom, demanding attention to clothes and grooming, and, in some cases, as "subjecting" the girl to feminine biological functions, such as menstruation and childbirth. They appeared to have little self-esteem, and to be insecure and self-rejecting. They displayed few interests, had difficulty with friendships, had a low activity level, and generally appeared to have a *poorly defined sense of their own ego identity (38).*

61. Heilbrun, 1964
88. Mussen, 1962
89. Mussen, 1961
38. Douvan & Adelson, 1966

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The tragic irony of the school dropout is that he is most likely to come from segments of our society already disadvantaged economically and discriminated against socially *(8, 34)*. Thus, the dropout rate is highest in slums and among members of minority groups. The dropout rate among blacks is double that for whites (22, 197), even though four out of five dropouts are white.

Already unemployment rates among adolescents seeking work approximate 70 percent in some restricted urban areas, and a large percentage of these young people are school dropouts. From the dropout group come the many delinquents and criminals, drug addicts, and the welfare-dependent, irresponsible, and illegitimate parents of tomorrow (22, 197). The incidence of delinquency is already ten times higher for dropouts than for those who remain in school (22, 197).

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School Dropouts

Most data on youth who fail to complete their high school education indicate a connection between economic deprivation and dropping out of school. The dropout rate is highest among ethnically and racially segregated youth in urban slums. Virtually half of the students in such areas drop out of school (Cervantes 1965). In general, the dropout rate is higher among the poor than among the more affluent (Bandura and Walters 1959). While only about 1 out of 50 upper-class youth drop out of school, the rate increases within each lower socioeconomic bracket. In the upper middle class it is about 1 out of 6; in the lower middle class, it is 1 out of 4; and among the lower class, it is 1 out of 2 (Cervantes 1965).

However, it is rarely economic conditions alone that are the major causes of dropping out. Cervantes (1965) found that less than 5 percent of lower-class dropouts withdrew specifically for financial reasons. Rather, it is the cultural, social, and family climate associated with the poor and the victims of racial discrimination that seems to be more directly responsible for the higher dropout rate. For example, large and uncohesive, often fatherless, families with few problem-free friends are characteristic of such backgrounds (Cervantes 1965).

OTHER FACTORS IN DROPPING OUT. Besides socioeconomic status, other factors such as achievement level, patterns of academic and social failure in school, and emotional problems play a role in causing school dropouts. (Some of these factors may be related to the social class conditions.)

Although a number of dropouts are below average intelligence (more so than for graduates), the majority fall within the average I.Q. range. According to Cervantes (1965), it is less a question of I.Q., and more a matter of the dropout's academic performance, that is an important factor in his withdrawing from school.

Typically, the dropout has had a history of failure, both academically and socially, during his years in school. He is generally two years behind the normal student in reading and arithmetic by the time he reaches the seventh grade. And he is likely to have failed at least one school year (Cervantes 1965). His performance in general is consistently below his potential.

In addition to academic failure, the school dropout has generally experienced some sort of social failure in school as well. Cervantes (1965) has found that dropouts are relatively unpopular with their peers in school and usually do not participate in extracurricular activities. The friends they have are usually not approved of by their parents, and are themselves not school-oriented.

Family problems, and particularly lack of communication within the family, are also important contributing factors in dropping out. Cervantes (1965) found that four out of five of the dropouts he studied felt their families understood and accepted each other "very little."

Antecedents of Dropping Out

Both sociological and psychological factors appear to be involved in the adolescent's dropping out of school. The dropout rate is highest among ethnically segregated youth living in urban slums. It is higher among the poor in general than among the more well-to-do (6, 98). However, extensive investigations indicate that economic need per se is seldom a major factor in dropping out *(22)*. In one such study of 2579 youths dropping out of school between 1960 and 1961 in a large urban community, only 3 out of 100 students withdrew primarily because of financial need or because they were needed at home (22, 99).

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Among upper-upper-class families, only one youth in fifty—and among lower-uppers, only one in ten—fails to finish high school. Among upper-middle-class youth, the proportion of dropouts is one in six, and among lower-middle and upper-lower class youth, it is one in four. At the bottom of the socioeconomic ladder, one in two lower-lower-class youth dropped out prior to completing high school (22, 97).

School Experience and the Dropout. A greater number of dropouts than graduates are below average in intelligence and the probability of dropping out of school prior to completion of high school varies inversely with intelligence *(22, 36)*. In one large scale study, it was found that nine out of ten students in the upper one-third in intelligence went on to graduate from high school, as compared with seven out of ten in the lowest third *(111)*. Apparently a high level of intelligence favors graduation, but intelligence per se is not a decisive factor in most cases of dropping out of school. A majority of dropouts are of at least average intelligence *(22 101; 39)*.

School difficulties, both academic and social, play a prominent role in the history of most dropouts. The typical dropout, even though of average IQ, is two years behind in reading and arithmetic at the seventh grade level, and a majority of his grades are below average. He is likely to have failed one or more school years *(8, 22)*.

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There are many reasons for discrepancies between the potential dropout's intelligence and his basic academic skills: deficiencies in home background, in motivation, in emotional adjustment, in the appropriateness of his teaching, and the like

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Failures in being able to keep up academically, or in finding relevance and challenge in the school curriculum, are not the only factors that may make continuance in school a frustrating and unrewarding experience. As we have already seen, for many lower-class youth (among whom the largest numbers of dropouts are found), school is an unrewarding experience *socially* as well as *academically*. They do not participate to the same degree as other youth in the social life and activities of the school; they do not share the values of their largely middle-class teachers; and they are likely to feel inadequate or resentful when confronted with the social, as well as the academic, demands of the school setting *(8)*. Similar reactions may affect dropouts from other social classes; and they also appear to affect the lower-class dropout more than the lower-class youth who stays in school. Even while still in school, future dropouts tend more frequently than nondropouts to associate with peers who have already dropped out *(22, 39)*.

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> One note that comes through loud and clear when listening to the life stories of the dropout is that he did not feel identified with the school. It is characteristic of the lower class not to participate in school activities to the same extent as do the upper classes [31] but the dropout seems to have been utterly without ties of identity at the time he dropped out. In another study it was found that "not one person who dropped out of high school before the third year had engaged in even one activity. Of those who had finished the third year, eighty-nine per cent had engaged in extracurricular activities" (22, 103).

The one fact which emerges most clearly at this juncture is that the school experience, as currently constituted, is failing to meet the needs—personal, social, and vocational—of an increasing number of our youth, particularly in the lower-class large urban ghettos. This is not to say that the fault lies solely with the schools themselves—obviously, larger social and personal factors are also involved.

Influence of Family and Peers. Not all dropouts come from deprived backgrounds, and many students who do come from deprived backgrounds (over 50 percent) successfully complete high school. Furthermore, in one study in which dropouts were matched in age, sex, school background, family socioeconomic status, and minority-group membership, significant differences still emerged in family and peer influences and in individual psychological characteristics of the students themselves *(22)*. Communication between parents and children, and mutual acceptance and understanding among family members are all significantly poorer in the families of dropouts than of graduates. For example, when asked, "Would you say that your whole family both understands and accepts each other?", 84 percent of dropouts gave responses of "little" or "very little," while 82 percent of graduates gave replies ranging from "moderate" to "very much" *(21)*. To

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6. Bandura & Walters, 1959

21., 22. Cervantes, 1965

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495 **Drug Users**

It is practically impossible to establish with any degree of certainty just how widespread drug use is among adolescents. Goldstein (1966) estimated that 10 to 15 percent of all American adolescents have taken some illegal drug of one kind or another. Although it is reasonable to assume that many of these adolescents have had only one-time experience with drugs, there are indications that heavy drug use is increasing among young people.

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495 *Marihuana.* **Although marihuana is often associated with the "hard" narcotics in drug laws, it is technically not a narcotic and not physiologically addictive. According to current evidence, marihuana does not necessarily lead to the use of hard drugs such as heroin. Nor is marihuana linked to crimes of violence. However, its use is still illegal, and penalties in some states are severe.**

Marihuana comes from the leaves and flowering tops of the female hemp plant, which grows wild or is cultivated in temperate or semitropical climates. Its strength varies according to the amount of a chemical, known as THC, present in the specific plant. Hashish is a more potent form of the drug, and the usual manner of taking either form is by smoking.

As a mild hallucinogen, marihuana, or "pot," apparently has some chemical effect on the brain and central nervous system, although specifically

495 **what effect is not known. Its subjective effects vary according to dosage, the individual metabolism and psychological mood, and the social setting in which it is taken. Generally, low or "social" doses produce a mild sense of euphoria or well-being, and a heightened sense of touch, sight, smell, taste, and sound. Larger doses can produce distortions of the body image, a sense of identity confusion or loss, and hallucinations. Most persons who continually use marihuana describe its effects in pleasurable terms (National Commission on Marihuana and Drug Abuse 1972).**

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719 **Drug Use Among Adolescents**

A problem of mounting concern over the past decade has been the rapid rise in the use of drugs by adolescents on college campuses, in senior and even junior high schools, and among school dropouts. Exact incidence figures are not available, and there are regional and interschool variations in the nature and extent of drug consumption, but it appears likely that at least 10 to 15 percent of all adolescents have experimented with illicit drugs of one kind or another (53). In considering college students, the greatest attention has focused on the use of marijuana, both because of the relative frequency of its use and the serious legal and social sanctions associated with the drug. More recently, attention has been directed to the still rather limited but increasing use of LSD (lysergic acid diethylamide) and related strong hallucinogens, such as psilocybin, mescaline, and DMT or "Speed" (dimethyltryptamine), all of which produce radically altered states of consciousness and perceptual distortions.

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720 *Marijuana.* **Despite its linkage in federal and many state laws with the opiates, marijuana is not a narcotic, nor is it physiologically addicting. Actually, it is a mild hallucinogen. On the basis of currently available evidence, use of marijuana is not likely to progress to use of heroin and other opiates, at least among middle- and upper-class individuals living outside ghettos. Nor is there any evidence that the use of marijuana is associated in the United States with crimes of violence, despite claims to the contrary.** Most marijuana users, particularly among college students, fall in the category of "dabblers," who may try it a few times out of curiosity or feelings of rebellion, and then give it up. Only a small percentage can be described as "potheads" (repeated frequent or chronic users).

Nevertheless, convictions for sale or even use of marijuana may result in 2- to 10-year federal sentences for a first offense, and 5 to 25 years for a second offense. In 44 states, the maximum possible sentence is 5 years to life. To use the drug is to subject oneself to possible (even if infrequently given) sentences of this severity, or to a lifetime police record as a felon— hardly a very good way to maintain one's "cool." Secondly, as a hallucinogen, marijuana may occasionally in some persons produce all the untoward effects attributed to more potent hallucinogens, including confused, uncontrolled behavior and psychosis (47). Even though the risk of such consequences may not be great in most cases, it cannot be dismissed. Further, use of marijuana, like the use of alcohol, may impair judgment, perception, and coordination, and such disruption may be particularly dangerous if one is engaged in any skilled activity, such as driving.

The actual mechanisms by which marijuana produces its effects in the brain are not yet known, and it is also possible that there are long-term physiological or psychological effects of which we are still ignorant. At present, however, it appears that a few deaths occur from the depressant effects of marijuana taken in extremely large doses; "by contrast, cirrhosis of the liver, heart conditions and other disorders brought about by alcoholism claim some twenty thousand lives in the United States every year (121, 47). Chronic "potheads," who are usually already suffering from some form of psychiatric disorder, may, of course, in their prolonged semistupors, fail to take adequate care of themselves physically, including failure to gain adequate nutrition.

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LSD and the stronger hallucinogens. The exact physiological effects of LSD and other hallucinogens such as mescaline, peyote, and psilocybin are for the most part still unknown. Although there have been some reports of possible chromosomal damage resulting from the use of LSD, much more research is needed before any definite conclusions can be drawn.

Subjectively, LSD and related drugs produce various hallucinatory experiences, usually of a somewhat different and much more intense nature than those produced by strong doses of marihuana. These hallucinations are often described in aesthetic, religious, or mystical terms, in which the user describes a sense of "at-oneness" or unity with God or the cosmos. However, these drugs also can create states of acute anxiety, sometimes described as "bummers." They have also been known (especially in large doses) to produce acute psychosis, the effects of which may persist for some time. For instance, in a 10-month period in 1965, 65 persons were admitted to Bellevue Hospital in New York City with acute LSD-induced psychoses (Louria 1966).

LSD and Other Hallucinogens. The hallucinogens may vary from mild (e.g., aeroplane glue, nutmeg, marijuana, morning glory seeds) to moderate (e.g., psilocybin, mescaline, peyote—the Indian ceremonial drug) to highly potent (e.g., LSD-25). As already noted, sniffing of glue and similar substances remains a persistent and probably growing problem among school children (*48*, 108). Use of LSD and other strong and moderate hallucinogens, while still not widespread, appears to have increased in recent years among late adolescents, both on and off college campuses, and particularly in the larger, urban-oriented universities. There is some suggestion, however, that recent reports of chromosomal aberrations and genetic defects resulting from the use of LSD may be reducing interest in this and related drugs, particularly among college students.

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Use of LSD may lead to experiences of a sense of timelessness, vivid panoramic visual hallucinations of fantastic brightness and depth, a heightening and blocking of sensory experience, and feelings of a loss of individual identity, together with a feeling of unity with other human beings, animals, inanimate objects, and the universe in general. It is argued by the proponents of LSD that such experiences give one a new, superior, and lasting insight into oneself and the universe. under proper conditions. While there is little doubt that many LSD users sincerely have these feelings, there is also no evidence that its use increases creativity or artistic productivity.

The effects of LSD vary from one individual and from one situation to another, and are highly unpredictable. An LSD "trip" may also produce bizarre and frightening images, a sense of isolation and depersonalization, acute panic, and paranoia (a pathological suspiciousness). In a 10-month period in 1965, 65 persons were admitted to the Psychiatric Division at Bellevue Hospital in New York with acute psychoses induced by LSD (79). Some of these people may have already been psychotic or prepsychotic, and in some cases the acute psychoses cleared up within 48 hours. On the other hand, 5 of these persons who appeared to be functioning adequately prior to taking LSD required long-term hospitalization in a psychiatric institution. Many large urban hospitals and university medical centers are currently reporting alarming increases in the incidence of victims of "bad trips." In some of these institutions in 1967, rates doubled in a period of a year.

53. Goldstein, 1966
79. Louria, 1966

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"Ups" and "downs"—the amphetamines and barbiturates. Another variety of drugs used are the "pills"—notably amphetamines and barbiturates. In contrast to the other drugs we have mentioned, the "pills" are legal when prescribed by physicians for medical treatment. The amphetamines are medically useful for the control of overweight, for relief from fatigue, and in the treatment of mental depression. Barbiturates are often prescribed as sedatives, and to relieve excessive tension and anxiety.

The amphetamines are stimulants and are often referred to by users as "ups," "speed," or "pep" pills because of their antidepressant effects. These drugs, while not truly addictive, are often psychologically habituating and dangerous. They can cause aggressive behavior, intellectual impairment, hallucinations, and paranoia. They are likely to give the user a false sense of well-being and delusions of self-importance. Habitual use has been known to lead to self-neglect and, because of their reduction of the hunger drive, to malnutrition.

The barbiturates (sleeping pills), often called "downs," are habituating as well as physiologically addictive. Their use accounts for some 3000 deaths a year by accidental or intentional overdose. The habitual use of barbiturates produces noticeable self-neglect, slurred speech, defective judgment, chronic drowsiness, and ataxia—loss of muscle coordination (Goldstein 1966). Barbiturate withdrawal can often be more severe than heroin withdrawal, including such symptoms as extreme nausea, fever, hallucinations, convulsions, stupor, and coma. It is sometimes even fatal.

In addition to these pills, there are also a number of nonbarbiturate tranquilizers and sedatives which, while not generally addictive, are often psychologically habit-forming.

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The "Pills." The problems posed by the "pills"—barbiturates, tranquilizers, and amphetamines—vary from one category to another. The barbiturates (sleeping pills) account for three thousand accidental or intentional deaths a year, but habituation and addiction are far greater problems *(47)*. Barbiturate addiction is characterized by intellectual impairment, self-neglect, slurred speech, tremor, defective judgment, drowsiness, emotional lability, bizarre behavior, and ataxia *(47, 53)*. Withdrawal symptoms are actually more acute for barbiturate addiction than for heroin, and, if withdrawal is abrupt, may include nausea, high fever, delirium, hallucinations, and most dangerous of all, convulsions, stupor, and coma that may be fatal *(47, 53)*.

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A number of nonbarbiturate sedatives and tranquilizers may also be physiologically, as well as psychologically, addictive. The amphetamines (pep pills) do not produce true physiological addiction, but they may be psychologically habituating and dangerous. Judgment and intellectual impairment, aggressive behavior, incoordination and hallucinations, may all occur during habituation *(47, 53)*. Suspicious or paranoid feelings frequently accompany chronic high dosages of the amphetamines. Combinations of these drugs, with each other or with alcohol, may be particularly dangerous, and have led to increasing numbers of deaths in recent years.